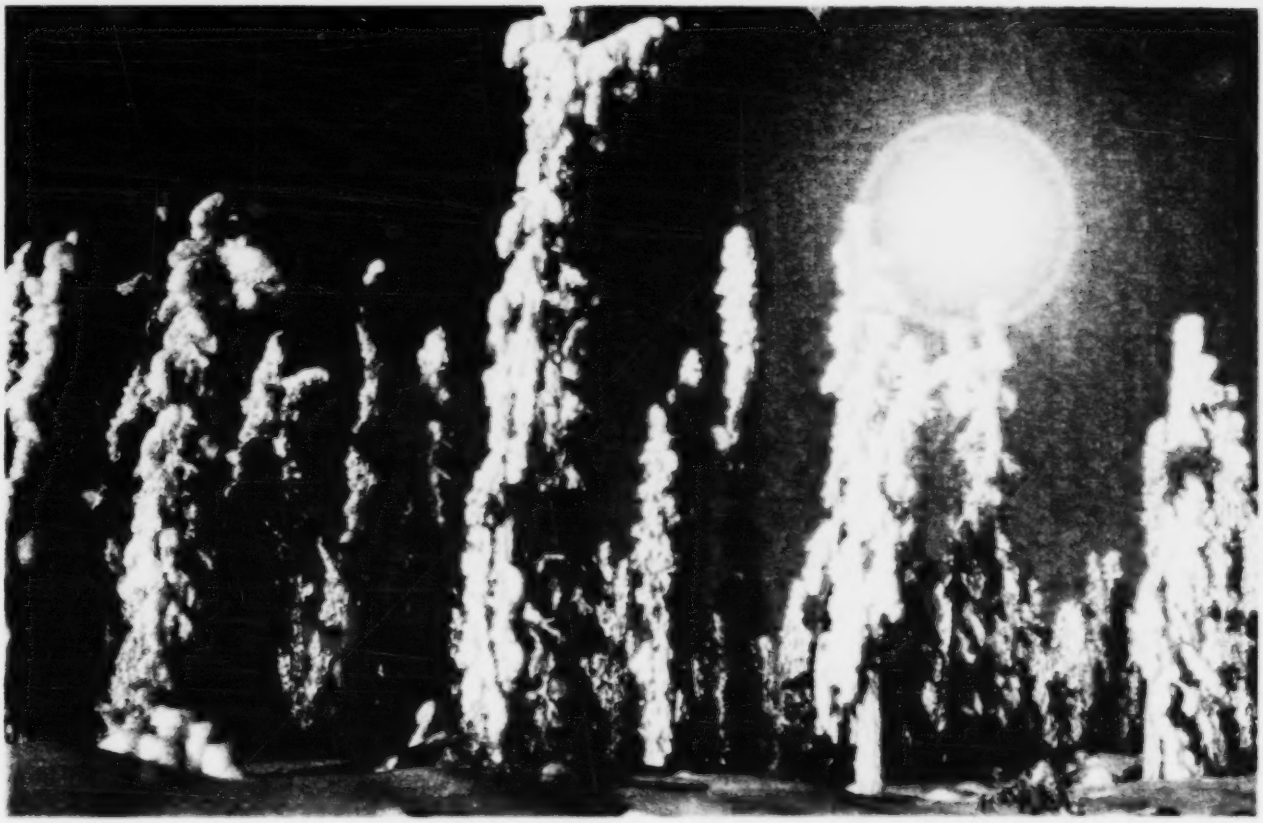
Compendium of Research in the Northwest Territories 1999



Including: Scientific Licences, Archaeology Permits, Wildlife Permits and Fisheries Permits

AURORA RESEARCH INSTITUTE
AURORA COLLEGE

About the Aurora Research Institute

The Aurora Research Institute (ARI) was established in 1995 as a division of Aurora College when the Science Institute of the Northwest Territories (NWT) divided into eastern (Nunavut) and western (NWT) divisions.

The Aurora Research Institute's mandate is to improve the quality of life for NWT residents by applying scientific, technological and indigenous knowledge to solve northern problems and advance social and economic goals.

ARI is responsible for:

- licensing and coordinating research in accordance with the NWT *Scientist Act:* This covers all disciplines including the physical, social, biological sciences and traditional knowledge;
- promoting communication between researchers and the people of the communities in which they work;
- promoting public awareness of the importance of science, technology and indigenous knowledge;
- fostering a scientific community with the NWT which recognizes and uses the traditional knowledge of northern aboriginal people;
- making scientific and indigenous knowledge available to the people of NWT;
- supporting or conducting research and technological developments which contribute to the social, cultural and economic prosperity of the people of the NWT

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FOREWORD

The Compendium of Research is an important part of the Aurora Research Institute's efforts to keep northerners and other researchers informed of research activities in the Northwest Territories. By participating in the research licensing requirements for the north, researchers ensure that their research information is accessible to all those who need to be informed and others who may be interested in these activities. The sharing of this information allows for greater involvement of northerners in the development of research programs that are pertinent to the needs of the north. This information also enables researchers to work collaboratively on related issues.

The need for scientific and technological knowledge and development for northern environments is increasingly recognized by the people, the governing agencies and the private sector of the Northwest Territories. Training in these areas is critical to allow for adaptation to the rapidly changing social and economic structure of the North. ARI actively promotes partnerships with community groups, government agencies, and private sector organizations in order to identify research needs and strategies to meet these needs. Researchers are also partners in these endeavours.

Through the research licencing and permitting requirements, aboriginal organizations and community groups have input into the research that is conducted and are kept informed of current and proposed research in their region. ARI in cooperation with researchers assist in training community members to participate in research projects within and outside their communities.

Researchers make a valuable contribution to the north as they provide information and education through schools and community presentations, and they also provide employment and training opportunities. There are an increasing number of partnerships and cooperative programs being developed with researchers and the people of the north. By sharing this information the people of the north are able to help in shaping the future direction of research in their region.

The Aurora Research Institute works to connect the scientific community with the communities of the Northwest Territories by promoting and supporting studies which improve the understanding of the natural resources and indigenous knowledge and cultures of the NWT. The Compendium of Research is one means in which scientific and traditional knowledge is made available to people of the NWT.

Valoree Walker, PhD
Director
Aurora Research Institute

103-04128/

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About This Book

This Compendium is a summary of research licences/permits that were issued in the Northwest Territories during 1999. A separate Compendium, that includes licences/permits for Nunavut, can be acquired through the Nunavut Research Institute in Iqaluit or from their website at http://pooka.nunanet.com/~research/. The information contained in this book is a collaboration between the Aurora Research Institute (ARI), the Prince of Wales Northern Heritage Centre (PWNHC), the Department of Resources, Wildlife & Economic Development (RWED) and the Department of Fisheries & Oceans (DFO). The Compendium series began in 1986.

LICENSING IN THE NWT

Under territorial legislation, all research in the NWT requires a licence/permit from one of three agencies, depending on the type of research being conducted:

- Prince of Wales Northern Heritage Centre - Archaeology
- Department of Resources, Wildlife & Economic Development, Government of the Northwest Territories - Wildlife
- Aurora Research Institute - All other research in the NWT

Included in this Compendium are Fisheries Research projects conducted by the Department of Fisheries and Oceans staff. Other researchers conducting fisheries research are required to have a Science Licence and are included in this section of the Compendium. In addition to one of these licences/permits there may be other permits required depending on the nature of the research work.

Through the licensing process, researchers are informed of appropriate organizations, communities and other licensing/permitting agencies that should be contacted prior to conducting studies. Licensing ensures research activities are communicated to interested parties and provides opportunities for the exchange of information.

Although the Compendium is a summary of all licences/permits issued in the NWT by all three licensing/permitting bodies, it is not a list of actual research conducted. Verification and additional information should be requested from the researcher.

HOW TO USE THIS BOOK

This book has four main sections. Each of these sections reflect a specific licencing agency and type of licence/permit issued. Within each section research descriptions have been grouped by subject, and listed alphanumerically by the principal researcher's last name. Refer to the Table of Contents for the specific page each section and/or subject area begins on.

1. Reference Number

The reference numbers shown in each of the Aurora Research Institute's subject areas refer to the file number issued to a particular researcher. It allows cross referencing with research material that may be available on file or in the ARI library. The reference numbers of the other two agencies refers directly to the permit number given to each researcher. When requesting information from any of these agencies on specific research outlined in this compendium please refer to the reference number in your correspondence.

2. Regional Abbreviations

Throughout the book reference is given to the specific land claim region(s) that the research took place in. The regions are shown in Figure 1. Some of the land claim regions are still under negotiation and boundaries shown are only approximations. The abbreviations shown for each region are as follows:

DC	Deh Cho	**SS**	South Slave
NS	North Slave	**SA**	Sahtu
IN	Inuvik (includes Gwich'in and Inuvialuit Settlement regions)		

3. Index

At the back of this book, you will find a index. This has been developed to help the reader cross reference material more easily. The numbers listed in the index refer to the number listed with each research description, not page number.

4. Glossary

A glossary of terms has been added to the compendium. The intent of the glossary is to allow the reader to better appreciate the research descriptions.

AVAILABLE IN PRINT OR ON CD

The Compendium is available as a printed publication or digitally on CD. The Compendium can be downloaded on the Aurora Research Institute's Web site (www.nwtresearch.com) or a copy can be requested by contacting the Aurora Research Institute. The CD version is in WordPerfect format and has limited search capabilities. Contact the ARI for further information regarding search capabilities and services. We encourage photocopying of the printed publication to promote its distribution.

FOR MORE INFORMATION ABOUT THE RESEARCH LISTED IN THIS BOOK

Please Contact:

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SEND US YOUR COMMENTS

Whether you are a researcher or an interested member of the public, the Aurora Research Institute welcomes your comments and suggestions about the Compendium. Contact us by mail, fax, e-mail or telephone (See address above).

Figure1: Land Claim Regions in the Northwest Territories

Aurora Research Institute
Science Licences

Biology

601 Biology

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Reference No: 12 402 616
Region: IN Location: Aulavik National Park

Flora of the Canadian Arctic Archipelago

The Pan Arctic Flora project has been trying to find how far the Beringian influence extended, to develop an understanding of the distribution pattern of plants in the circumpolar Arctic. From June 29th to July 10th, plants were studied in Aulavik Park on Banks Island. The season was late and only very early season species were beginning to flower at the time. Flowering plants in the area were observed to have black hairs or dark coloration on the sepals (the part of the flower that covers the bud). It was apparent that this change helps developing buds trap available heat early in the season to assist in flower growth. A second observation involved a surprisingly long grass (*Arctophila fulva*) found growing in the tundra ponds near the Thompson River. Straw from the previous season's growth had detached from the plants and blown to the side of the tundra ponds. This grass was 1m long, making it one of the tallest plants in the park. Although there was no evidence that there had been any flowering during the previous season at the end of the grass straw (where flowers might have developed), occasionally there was new season's growth emerging from the straw. On the 13th of July, 26 detached stems with new leafy development at the end (and some moss on which they were lying) were collected. Thirteen samples were sent to Ottawa and the rest to Sachs Harbour, where the moss was placed in the bottom of a shallow container and the stems laid on top. Pond or rain water was used to saturate the moss, to keep the stems moist. As the season progressed, both groups developed roots at which time the moss was replaced with 10 cm of soil. By the end of August small plants had developed, which shows that new growth, from detached stems, may be able to propagate plants growing under conditions where the growing season is too short for them to flower. This appears to be the only species of about 400 plants that occur in the Canadian Arctic Archipelago able to propagate this way.

002 Biology

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Reference No: 12 402 597
Region: DC Location: 50 km north of Fort Providence

International Crown Fire Modeling Experiment (ICFME)

Phase 3 of 3 for the ICFME (ICFME-III) was successfully completed between June 16 and July 4, during which conditions for conducting experimental crown fires were excellent. ICFME-III involved burning six plots, bringing the total number of experimental crown fires over the past three years to 11. The June 17 experimental fire, which took place in the aspen plot, demonstrated the effectiveness of leafed-out aspen stands as fuel breaks for protecting values-at-risk (e.g., homes) in crown fire prone environments. The June 18 experimental fire was in the 1-1 "house" plot. Unfortunately, the wind changed direction soon after ignition. This resulted in the simulated house/clearing/treated area being subjected to the flank of an advancing crown fire instead of taking the brunt of the high intensity fire directly. The June 19 experimental fire in Plot 9 resulted in a record Canadian Forest Service experimental crown fire spread rate (~90 m *per* min). Another successful experimental crown fire was carried out on June 20 in plot 4. Rain (9 mm) on June 22-23 prevented experimental burning until June 28 , when the first attempt to burn plot S-2 was carried out. Plot 2 was burnt on June 29; unfortunately only half of the area ended up burning due to slacking of winds soon after the flame front passed the plot midpoint. Rain effectively ended ICFME-III on June 30. The fourth, and presumably final, phase of ICFME is tentatively scheduled for June 10-July 1, 2000. For further information, including a detailed progress report for the 1999 field season, see the ICFME web site at: *http://www.nofc.cfs.nrcan.gc.ca/fire/finet/wwt/*

003 Biology

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Reference No: 12 402 611
Region: IN Location: Town of Inuvik and Gwich'in Settlement Area lands

Sustainable Alternatives to Industrial Forestry in the Gwich'in Settlement Area

Trained research assistants from the Departments of Anthropology and Renewable Resources, University of Alberta, worked with the Gwich'in Renewable Resource Board to develop a forest management plan based on the priorities identified by the Gwich'in Elders and contemporary Gwich'in forest users. The project looked at the socio-economic aspects of an integrated management plan and takes Gwich'in views about land and resources seriously. Workshops set up with Elders and contemporary forest users, as well as reviews of community archives and previous research, were used to derive a viable forest management plan.

004 Biology

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Reference No: 12 402 621
Region: IN Location: an area north of the Inuvik townsite

The Effects of 24-Hour Daylight on Patterns of Diurnal Vertical Migration in Freshwater Epipelic Algae

Microscopic, single-celled algae living in lakes and wetlands are known to undergo patterns of daily movement into, and out of, the sediment layer on the bottom. This is thought to maximize exposure to sunlight, and minimize exposure to potential predators during darkness. As part of a larger study, researchers sampled two small wetlands south and west of Inuvik (in the vicinity of the Dempster Highway) between July 9th and 13th 1999, to find out what effect 24-hour daylight would have on these movement patterns in the natural environment. Several hundred small plexiglass rings (2.5cm diameter), which had tissue paper attached to one end, were placed, tissue side down, onto the sediment at the beginning of the experiment. The tissue paper, which acted like a sponge, allowed researchers to trap , and count, the algae present on the top of sediment layer at any given time. After an initial three hour period, sampling traps were removed at a rate of two *per* hour. Following removal from the wetland, the tissues were cut away from the plexiglass rings, dried, and preserved for later laboratory studies. It was proposed that, since the normal pattern of algae activity appears to be regulated by day/night cycles, 24-hour daylight would result in a complete lack of any pattern. In other words, cells would move into the sediment after having received sufficient sunlight and would come out again once the need for further sunlight arose. As this would differ from one algal species to the next, a random pattern was predicted. Although not yet completed, microscopic studies of the sampling traps appear to confirm this.

005 Biology

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Reference No: 12 402 601
Region: SA Location: Fort Good Hope, Tulita, Norman Wells, and Wrigley.

Assessment of Stream Crossings for Planned Improvements to the Mackenzie Valley Winter Road.

Twenty-nine selected stream crossings along the Mackenzie Valley Winter Road, N.W.T. were surveyed from July 29 - August 7, 1999. The survey focused on six areas: wildlife, vegetation, soils, terrain (geomorphology), fish habitat, and archaeology. The objective was to confirm existing environmental information and obtain current field information in the area of selected stream crossings. Where possible, existing traditional knowledge information was also accessed. The Department of Transportation (DOT) staff selected the following streams for the survey: Donnelly River; Overflow Creek; Hanna Creek; Prohibition Creek; Nota Creek; Big Smith Creek; Little Smith Creek; Saline River; Steep Creek; Blackwater River; Dam Creek; Vermillion Creek South; Strawberry Creek; Whitesand Creek; Bonnie Creek and Ochre River. An additional thirteen unnamed drainages were also surveyed.

006 Biology

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Reference No: 12 402 601
Region: DC Location: Fort Liard and Nahanni Butte area.

Environmental Assessment for Exploratory Drilling Project

Golder Associates Ltd. conducted field surveys of three proposed exploratory well sites near Nahanni Butte and Fort Liard. Existing environmental and socio-economic conditions were documented during a literature review and environmental field survey on August 25-27, 1999. Wildlife, terrain, and fish ha' 'tat characteristics were studied in the area of , and along the access route to, the well sites. A brief, directed traditional knowledge study was conducted by the community of Nahanni Butte. Further information may be found in the Environmental Impact Assessment Report for the 2000 Netla Exploratory Drilling Project.

007 Biology

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Reference No: 12 402 613
Region: IN Location: northwestern NWT

Tundra Northwest 1999

The expedition Tundra Northwest 1999 was a ship based project that worked off an icebreaker (Louis St. Laurent) through the Canadian Arctic Archipelago and off the Coast of Alaska. The overall goal of the expedition was to study geographic variation of terrestrial and freshwater ecosystems of the tundra. Before the expedition took place communities were contacted and informed about the intentions and actions that were to be taken during the project. During the TNW99 expedition, lemmings were the only animal that were trapped and killed for population analysis. Other animals were caught but not killed. Birds were live trapped and later released. Arctic charr was part of the research program, but no living fish or fish roe were taken for commercial use. This would have been infringement on the economic interests of the local communities. During the expedition the team was able to revisit all the communities and exchange information again. This project was a continuation of the 1994 Swedish-Russian Tundra Ecology expedition.

008 Biology

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Reference No: 12 402 618
Region: IN Location: Inuvik

GIS Range Management Feasibility Study for Kuññek Resource Development Corporation (KRDC)

A Geographic Information System (GIS) feasibility study was conducted for Kuññek Resource Development Program (KRDC) to determine if this system was a workable platform for co-managing range. A literature review and discussion with various departments and businesses showed that this system allows for the integration, synthesis and analysis of a wide variety of spatial data which may more readily organize activities in cooperatively used areas. Therefore, it was concluded that with a GIS system, the firm may be more capable of monitoring, evaluating and analyzing range conditions to not only maximize herd productivity but also potentially reduce the likelihood of conflict between range users. However, while GIS development will be initially expensive for KRDC, costs may be reduced or offset by: developing the GIS in a number of phases starting with a more manual system; creative data collection by using existing data sets; developing joint projects and promoting academic research initiatives; and seeking support (in-kind or cash contributions) from local land users and community groups with an interest in the range area. In conclusion, it was found that GIS is a necessary cost of developing a productive reindeer industry and to ensure sustainable resource development in general.

009 Biology

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Reference No: 12 402 606
Region: DC Location: the Fort Liard area

Chevron Ft. Liard Potential Routing Selection Program

Golder Associates Ltd. conducted an environmental assessment for the Chevron Canada Resources for their proposed Fort Liard Pipeline Project (the K-29 well site, associated gas dehydration facilities and approximately 36 km of pipeline to link the well to the Westcoast Transmission Pipeline). A technical report prepared provides results of field surveys carried out in May 1999. The goal was to obtain baseline information that could be used, along with other existing information to ensure that potential impacts of the project are avoided or minimized to the greatest extent possible. Surveys covered the following disciplines: hydrology, soils and vegetation, wildlife, fisheries and archaeology. In addition, the Fort Liard Acho Dene Koe permitted Chevron to use previously collected traditional knowledge (TK) information as baseline information for this project. Recommendations concerning potential impacts and proposed mitigation measures that stem from this study were included in a environmental impact assessment report.

010 Biology

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Reference No: 12 402 606
Region: SA Location: 20 km SW of Tulita, NT

Environmental Assessment for Proposed Oil and Gas Development Activities in the Tulita area, NWT
Northrock Resources Ltd. and its partners proposed to drill two exploration wells in the Mackenzie River Plain near Tulita, Northwest Territories, during the winter of 1999-2000. Golder Associates Ltd. conducted an environmental assessment for the wells. A final report covers regulatory approvals and process, field surveys, a literature review, and impact assessment for the following areas of concern: air and noise, soils and vegetation, wildlife, fish, socio-economic impacts, cultural and heritage resources, and cumulative effects, and ways of addressing these areas of concern. A field survey was conducted between July 19-20, 1999 on the proposed well sites (N. MacKay I-77 and W. Fallstone F-01), associated access routes, creek crossings, proposed water source lake and preferred drilling camp location. A second field trip was also conducted on August 31- September 4, 1999, to complete required surveys, which were conducted to obtain additional baseline information necessary to assess environmental issues associated with the proposed project. This survey included on-site visits and/or aerial inspections of the proposed well site, associated access route, preferred construction/drilling camp locations, potential water source points, borrow pit sites and major stream crossings, to document vegetation types, signs of wildlife, and fish habitat.

011 Biology

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Reference No: 12 402 606
Region: DC Location: Fort Good Hope and Tulita area

Environmental Assessment for AEC's Proposed Oil and Gas Development Activities in the Sahtu, NWT
Alberta Energy Company (West) Ltd. proposed completion of an exploratory drilling program in the Fort Good Hope and Tulita areas of the Northwest Territories. Golder Associates Ltd. conducted an environmental assessment for the wells. A final report covers regulatory approvals and process, field surveys, a literature review, impact assessment for the following areas of concern: air and noise, soils and vegetation, wildlife, fish, socio-economic impacts, cultural and heritage resources, and cumulative effects, and ways of addressing these areas of concern. A brief, directed traditional knowledge study was conducted by Tulita and Fort Good Hope to describe environmental and land use in the proposed project area and to define issues of concern. A field survey was conducted on September 26 -27, 1999. Signs of wildlife identified in the vicinity of the well sites included moose, grouse and bog lemmings. Fish habitat in the Little Birch River and Devo Creek was described.

012 Biology

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Reference No: 12 402 601
Region: DC Location: Fort Liard area

Environmental Assessment for Proposed Oil and Gas Development Activities

Golder Associates Ltd. conducted field surveys of 10 proposed exploratory well sites and one proposed right-of-way for a pipeline near Fort Liard. Existing environmental and socio-economic conditions were documented during a literature review, environmental and archaeological field survey and a directed traditional knowledge study conducted by the Acho Dene Koe. Wildlife, terrain, and fish habitat characteristics were documented in the area of the well sites and proposed pipeline. Fish sampling (electro fishing) was conducted on two streams that may be crossed by the pipeline. Lake chub, northern redbelly dace, and brook stickleback were found in one streams. No fish were captured in the second stream sampled. Further information may be found in the environmental impact assessment reports for the project.

013 Biology

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Reference No: 12 402 620
Region: IN Location: Within 200m of the Dempster Highway

Bacterial Biodiversity as a Source of New Biological Products

The purpose of the research is to understand the nature of the microbial communities that live in permafrost soils, and to assess their potential to develop new medical or industrial products. Although this is only the beginning of a research program that will be carried out over several years, preliminary results are extremely interesting. Bacteria from the *Actinomycete* family, which is one of the richest sources of medicines (such as antibiotics) found in nature, have been readily isolated from the top (active) layer of the permafrost. Since this group of bacteria has been poorly studied in permafrost soils, it is possible that many new compounds can be extracted from them. The permanently frozen layer of permafrost soil contains a complex mixture of bacteria, but few members of the Actinomycete family. Interestingly, about 1% of the bacteria in this layer are unable to survive at 20° higher temperature. With global warming these bacteria may become extinct.

014 Biology

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Reference No: 12 402 412
Region: SS Location: Wood Buffalo National Park, along Highway No.5.

An Exploratory Evaluation of the Effect of the Climate Change During the Past Two Centuries on Structure of Jack Pine Forests

The main objective of the proposed research was to reconstruct the structure of forests of different ages, and to explore whether or not recent climate change has affected the structure of the forests in Northern Canada. Pure stands of Jack pine or aspen were studied in Wood Buffalo National Park, to determine the effect of climate change on those forests. In particular, the number, height and thickness of stems that were growing in the forest during the past two centuries have been reconstructed, by using a recently developed technique for estimating the past structure of the forests. To do this, annual rings were collected from many trees in the forest, and information on the previous condition of the forest was extracted from the ring patterns. When the data is organized, the results will be compared to the structure of younger forests that grew in more recent, and presumably warmer years. An extensive collection of the stem core samples in two Jack Pine forests was made, a relatively young stand (about 40 years old) and an old forest (about 160 years old). The stem cores have been mounted on wood platforms, sanded to make the tree rings clearly visible, and their ring-widths measured. So far, 50% of the sample preparation and measurement has been completed. Final conclusions should be available by the end of 2000.

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015 Biology

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Reference No: 12 404 521
Region: NS, DC Location: along NWT Highways 1, 3 and 7

Anti-cancer Agents from Microorganisms

Small soil and mud samples were taken along NWT Highways 1,3, and 7 during late summer. All travel was done on highways, with actual collections made on foot. Samples were taken in the Hay River area (from the river and bank mud), along the Slave River, down into Northern Alberta and from the North Slave and Deh Cho Regions. Soil samples, which consisted of a few grams of material from each location, were taken to the University of Arizona. The microscopic organisms living in the soil will be isolated , and examined, to determine if any organism (or compounds produced by the organism) exhibits anti-cancer properties. Results of the study should be available in about two years time.

016 Biology

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Reference No: 12 402 608
Region: NS Location: Snap Lake Project Site

Snap Lake Project Environmental Baseline Survey

Golder Associates Ltd. conducted a baseline environmental data collection program on behalf of Winspear Resources Ltd. that will provide the basis for an environmental impact assessment. The objective of the program at Snap Lake, NWT was to further establish baseline environmental conditions including air, water, sediment quality, aquatic resources, fish, fish habitat, plankton, terrestrial resources (plants and wildlife) and to expand on 1998 data. Traditional knowledge studies were also initiated to gather and help refine the field studies and to document environmental conditions and areas of concern to local communities. Data collection is on-going into 2000. Data will be presented in a technical report once data collection is complete.

017 Biology

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Reference No: 12 402 619
Region: IN Location: Sachs Harbour

Sachs Harbour Benthic Communities

The 1999 field season did not progress as planned. First, the Tucho Mariner was not certified to sail by Transport Canada, and was unavailable. Second, equipment needed to conduct the photographic survey was damaged in transport and could not be repaired onsite. However, it was determined that the project could continue, working from the community with the Department of Fisheries and Oceans launch. In mid-August, a two week survey of Sachs Harbour began. The depth of the Harbour and habitat types it contained, were examined and maps produced from the results. Dives revealed only a few kinds of organisms living on the bottom of Sachs Harbour, in relatively small numbers. Toad crabs, which are collected locally as a minor food source, were the most common animals encountered. Crabs were collected by diving and crab traps and measured for morphometrics. Samples of stomach contents of the crabs were returned to Winnipeg for analysis. A small clam bed was found in the harbour that contained three species which could be eaten. However, the bed is very small and would not support a large harvest. Future surveys will examine numbers, and kinds of organisms living on the bottom outside the harbour.

018 Biology

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Reference No: 12 402 605
Region: NS Location: Ekati Diamond Mine, Diversion Channel

Panda Diversion Channel Monitoring Program, 1999

Arctic grayling utilized the Panda Diversion Channel (PDC) during the 1999 freshet period for migration and spawning. More adult grayling migrated into the PDC in 1999 than in 1998. Despite later ice-out conditions and higher flows in 1999, grayling were observed throughout the entire channel and were able to migrate through all PDC habitat and road-crossing culverts. Monitoring results also indicated the ability of arctic grayling to migrate from Kodiak Lake through the entire length of the PDC to Panda Lake, as well as downstream into the channel from Panda Lake. Arctic grayling spawning activity was observed at two locations in the channel, including an area where habitat enhancements were previously constructed. Grayling larvae were observed and collected within all six reaches of the PDC, indicating successful spawning activity within the channel. Larvae emerged in the vicinity of both constructed and enhanced fish habitat. More young-of-the-year arctic grayling were caught by electro-fishing in 1999 than were captured in the PDC in 1998. Other species captured included burbot, lake trout and slimy sculpin. Bottom dwelling invertebrates are colonizing the PDC and associate habitat structures quite rapidly. Investigations within the PDC and the constructed portion of Grizzly Creek also indicate that a healthy community of bottom-attached plants is being established.

019 Biology

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Reference No: 12 402 617
Region: NS Location: Two Rock Lake, Ulu Lake, Pigeon Pond and Stream, Big Reynolds Lake and Little Reynolds Pond, White Lake, Cujo Lake, King Lake, and Desperation Pond.

1999 Aquatic Baseline Studies Program

Baseline aquatic information was collected for 14 water bodies on the BHP Diamonds Inc. claim block, north of Lac de Gras. Proximity to potential development activities determined the water bodies selected for the study. Study components included hydrology, water quality, sediment quality, physical limnology, phytoplankton, zooplankton, lake benthos, fish communities and habitat assessment.

Contaminants

020 Contaminants

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Calgary, AB T2N 1N4

Reference No: 12 404 398
Region: IN Location: Holman, NWT

Human and Chemical Ecology of Arctic Pathways by Marine Pollutants

The research was conducted to improve the understanding of structure and function in arctic food webs as these contribute to changes in pollutant form, pathways by which they enter the food chain, and time which the pollutant stays in the environment. During Phase I, interviews were conducted in Holman, NWT to collect traditional knowledge on the impact of chemical pollutants. A total of 22 interviews were completed by the researchers, who were assisted by two community members (Winnie Akhiatuk and Robert Kuptana) trained in the interview and mapping process. Analysis of the interviews was completed at the University of Calgary. Ten additional interviews were conducted in Holman during December, 1999 and the information from these interviews was incorporated into the analysis of information already collected during Phase I. All interviews conducted were reviewed and validated by the participants. A draft report was then presented to the Hunters and Trappers Committee. Phase II of the project (the collection of plant and animal samples from the community) was then conducted by the researchers and community members. The final report on the human ecology component of the project will be completed and presented to the community of Holman in December 2000.

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021 Contaminants

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Reference No: 12 402 612
Region: NS Location: Marian River

Water, Sediment and Fish Testing of Marian River System

Dean Environmental was contracted to provide water assessment services (data collection only) to the Dogrib Rae Band during a canoe trip up the Marion River during September 1999. The community is concerned over the abandoned Rayrock Uranium Mine. Dead fish were seen in the Marion River during the summer of 1999, which prompted the Dogrib Rae Band to organize a trip to investigate water conditions in the river.

Geology

022 Geology

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Reference No: 12 404 506
Region: NS Location: Yellowknife area, Hearne Lake to Gordon Lake, Beniah Lake to Lac de Gras, Acasta River area, Point Lake area.

Thermatic, Structural, Stratigraphic and Geochronologic Studies of the Slave Structural Province

The study focuses on the relationship between very ancient rocks in the central, southern and western part of the Slave Province and the adjacent volcanic and sedimentary rocks. Results of in-progress studies are published in Geological Survey papers. A special issue of the Canadian Journal of Earth Sciences on the Slave structural province appeared in July 1999. This issue, guest edited by Drs. Wouter Bleeker and Bill Davis, contains 11 papers and represents a state-of-the-art view of the geology of the Slave Province. Results are also being reported yearly at the Yellowknife Geoscience Forum. Interim products were provided to the government of the NWT as the basis for their "Protected Area Study". Final results of the project will be shown on maps which will be part of a new geo-scientific atlas of the Slave Province. Geological maps combined with scientific data are essential for resource exploration and land use planning by various governments and stakeholders.

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023 Geology

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Reference No: 12 404 525
Region: SS Location: Along Hwy 5 from Hay River to Fort Smith

Teleseismic Investigation of Upper Mantle Anisotropy Beneath Great Slave Lake Shear Zone, NT

The Great Slave Lake shear zone is an ancient fault zone, nearly 2 billion years old, buried beneath layers of shallower rocks, which played an important role in the geological formation of the North American continent. The goal of this research project was to characterize this shear zone using techniques (similar to medical ultrasound imaging) based on passive recordings of distant earthquakes. Project field work took place from May 17 -October 13, when 13 temporary solar powered seismograph stations along Highway 5 between Hay River and the northern parts of Wood Buffalo National Park were set up. During this period, 44 distant earthquakes above magnitude 6.0 were recorded, along with 3 events in the NT above magnitude 3.5. Monthly service visits were performed by staff from the Yellowknife Seismic Observatory (Geological Survey of Canada), with more frequent checks on the equipment carried out by a resident of Hay River hired as a research assistant (Scott Minoza). Following field work completion, all equipment was removed and the sites restored to their natural condition. Although two solar panels were stolen during field experiments, no other equipment damage or losses occurred and data collected is currently being analysed. Preliminary results show that the shear zone extends to great depths (> 50 km) within the Earth.

024 Geology

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Reference No: 14 402 615
Region: NS Location: Ekati Mine site, Lac de Gras

The Effectiveness of a Diversion Channel in Providing Fish Habitat in NWT Barrenlands

In 1991, diamonds were discovered in the remote Barrenlands Region of the Northwest Territories, Canada. To get ready for mineral extraction, two lakes and their tributary streams were drained. A part of a compensation agreement, the mining company (BHP) designed and constructed a diversion channel with fish habitat structures. It was anticipated that the channel would restore watershed connections (i.e. lets fish migrate), and habitat structures would provide spawning and nursery habitats (i.e. fish can reproduce). The effectiveness of the channel habitat structures in providing productive fish habitat, where particular focus on Arctic grayling was examined. Preliminary data suggests that the diversion channel and natural streams contain similar fish densities, however, the natural streams support a significantly greater fish biomass. It seems that because there is reduced algae and sediment organic matter in the diversion channel, there are less 0-age grayling. Benthic invertebrate densities and biomass are also lower in the diversion channel in comparison to natural streams surrounding the mine. Adult grayling are able to go up and down the diversion channel in two days, and while adult grayling are spawning in the diversion channel, the relative success of the young is unknown.

025 Geology

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Reference No: 12 404 545
Region: IN Location: Inuvik area

The Growth of Aggradational Ice in Sediments of the Mackenzie Delta, NWT

This project looks at the development of near-surface ground ice in sediments in the Mackenzie Delta area. The field work done in 1999 is the first year of a three-year field program. Overall this research looked at the chemical and physical characteristics of the near-surface ice-rich zone, and will: (1) investigate the development through time of near-surface ground ice; (2) measure its variability and relationship with surface features (vegetation, micro-topography); and (3) investigate the geo-chemical characteristics of this near-surface ice-rich zone. Data collection in the summer of 1999 focussed on getting shallow permafrost cores using a hand held drill driven by a Stihl power head. Permafrost core samples were gotten from a point bar transect at Gill's camp near Reindeer Station, where a temporary field camp was established. Cores were also obtained from burned and unburned areas near Navy Road, (just north of Inuvik), as well as from burned and unburned areas near Chuk Park. Core samples were returned to laboratory facilities at the Aurora Research Institute, where moisture and excess ice contents were looked at. Pore water was extracted and samples analysed for water chemistry. Over 80 permafrost core sections were recovered in the summer of 1999; sample analysis is ongoing. This information can contribute to understanding the influence of permafrost on forest structure and may increase our ability to predict the occurrence of near-surface ground ice.

026 Geology

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Reference No: 12 404 398
Region: IN Location: 60 sites from Fort Simpson to the Beaufort Sea

Active Layer Monitoring Network in the Mackenzie Valley

During July-August 1999, the 9th annual survey of the active layer monitoring system in the Mackenzie Valley was completed from Fort Simpson to the Arctic Coast. One site was lost to animals while another ice-damaged site was repaired. Total monitoring site numbers are at 55, with about half in the Mackenzie Delta. Water filled clear plastic observation tubes recorded maximum thaw depth each year, while air and ground temperature recorders logged thermal conditions at many sites. When possible, sites were close to automatic weather stations and were shared with research groups doing complimentary work. Also, at the 1400 km transect, active layer thickness varies more as a result of local factors than to the regional climate associated with latitude. Though the variation is complex, over the last 6 to 8 years, thaw penetration has been observed to be increasing at many sites throughout the system. Records collected this year confirm that the 1998 thaw was the greatest yet recorded, in keeping with record warm temperatures. In the longer term, measurements from this transect will be used to help model climate change on near-surface permafrost in this fragile environment.

027 Geology

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Reference No: 12 404 548
Region: NS Location: Lac de Gras

Teleseismic Studies in the Lac de Gras Area

Seismometers were installed at the Ekati Diamond Mine and at the Kennady Lake camp in early March, 1999. The Ekati station has successfully recorded about 25 distant earthquakes to date and a first look at analysis of these records confirms previous measurements of the deep structure of the crust and mantle by the University of British Columbia researchers. The station at Kennady Lake did not function properly and will be re-installed in August 2000 along with another 2-4 stations at other mining camps. Based on the early successes, this project is now expected to continue for several years. Supporting research was presented at a 1-day short course held at the Yellowknife Geoscience forum on November 27, 1999.

028 Geology

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Reference No: 12 404 464
Region: DC Location: Fort Liard

Central Foreland Project- Surficial Geology Mapping, La Biche Map Sheet

As part of the Geological Survey of Canada's Central Foreland NATMAP Project, field investigations of the surficial geology of the La Biche River map area (NST 95 C), were begun. The distribution of erratic (rocks) and glacial geomorphology, notably extensive glacially streamlined bedrock hill (flutes), indicates that during the last glaciation the area was largely occupied by montane ice advancing from the west-southwest. Granite rocks were found in glaciofluvial and till deposits within the south-central area. This shows the presence of westward flowing laurentide (continental) ice ~30 km beyond what was thought before. This suggests Laurentide ice went further than thought. During de-glaciation, retreating ice enclosed the regional drainages, forming large, proglacial lakes. Ice and clay rich glaciolacustrine sediments and extensive shale deposits have led to widespread mass movements (slumps and debris flows) at varied scales (local to tens of square kilometers). These results will be included in maps which will provide a database for risk assessment.

029 Geology

Wolfe, Stephen
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Reference No: 12 404 549
Region: IN Location: North Head, Pullen Island, Hooper Island, Kendall Island, Garry Island, Pelly Island

Permafrost Response to Recent Climate Warming in the Mackenzie Delta and Yukon Coast

Field studies on ice wedges, active layer detachments and thawslides were done by Stephen Wolfe and Erica Kolter in the summer of 1999 on northern Richards Island, NWT, with a similar study along the Yukon. Observations, including depths to the tops of the ice wedges, were made and compared to those made in 1975 and 1984 by other researchers (1975 - MacKay; 1984 - Harry, French, and Pollard). Comparisons show ice wedges on northern Richards Island and along the Yukon Beaufort Sea coast have responded to increase thaw depths. Climate data also shows that air temperatures in these areas have been warmer-than-average since 1978, and that warming in 1998 was an extreme event. More thawing in response to this warming may have caused a decrease in the number of secondary and tertiary ice wedges which come from thaw truncation. Depths to the tops of ice wedges on Richards Island have increased, whereas depths have decreased on the Yukon coast due to thaw consolidation (settling of the ground). Thaw tube observations by Mark Nixon indicate 1998 thaw depths were the greatest since 1991 across the northern Mackenzie Delta region, with increases as much as 21 cm.

Health

010 Health

MacNeil, Chuck
Inuvik Regional Health & Social Services Board
Bag Service # 2
Inuvik, NT
X0E 0T0

Reference No: 12 408 116
Region: IN Location: Inuvik, NT

The Inuvik Regional Human Contaminants Monitoring Program
The Inuvik Regional Health and Social Services Board (IRHSSB)did a study looking at the presence of environmental contaminants in the blood and hair of local women and their newborns. Substances such as metals (e.g. lead) and organochlorines (e.g. PCBs) are found in small amounts in the North. The concern was focussed on long-range contaminants, which are carried northwards by marine (water) and atmospheric (wind) paths, and find their way into the food chain. Sampling of blood and hair continued until June 1999. The 104 participants in the study were asked to complete a dietary and lifestyle questionnaire. Of these, 102 completed questionnaires and 73 provided hair samples. A total of 185 blood samples (95 maternal and 90 umbilical cord) were collected. The samples were shipped to participating laboratories for testing and the results returned to the program coordinator for statistical analysis, to compare our results to other Regions, and possibly see if there is any relationship between diet and contaminant exposure. Community workshops and presentations also continued throughout the year. The study will contribute to circumpolar data on environmental contaminants and aid in the effort to maintain a healthy food supply & environment in the North. Presentations of the results of this study will happen in 2000.

031 Health

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Reference No: 12 408 556
Region: NS Location: Yellowknife

Integrating culture into nursing practice: A fourth generation perspective

Canada's Northwest Territories is rich in multiculturalism, approximately one-half of the population consists of Aboriginal people (Dene, Inuit and Metis). Educating nurses to deliver culturally appropriate care is imperative to meet the health care needs of this diverse population. The government of the NWT implemented a traditional knowledge policy (1994) that stipulates the need of the culture of the people to be reflected in all programs and service delivery. The purpose of this study was to evaluate the ways and the degree to which graduate nurses integrate culture into their practice and to discover effective and ineffective strategies to facilitate the learning of culturally appropriate care. Fourth generation evaluation, as described by Lincoln and Guba (1989), was the method used in evaluating the nursing program at Aurora College, Yellowknife Campus, Yellowknife, Northwest Territories, Canada. There were sixteen participants in three stakeholder groups – the faculty, the graduates and the clients. Data was collected through personal interviews and group meetings. Data was transcribed verbatim and the constant comparative method used to generate categories. A model of the process of the integration of culture in nursing practice was developed. This integration is essentially the integration of difference. It consists of four ways of being – inquisitive, receptive, interactive and reflective. Integrating culture in practice is a complex process embedded in the nurse-client relationship and implemented through the professional act of care. Implications for the enhancement of the cultural component of the nursing program were discovered and are presented through the northern knowledge model that identifies elements of traditional knowledge, individual and and community values, scientific knowledge and culturally appropriate ways to facilitate teaching and learning in a multicultural setting.

Physical Sciences

032 Physical Sciences

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Reference No: 12 404 325
Region: IN Location: Illisarvik, Richards Island, Inuvik area

Permafrost Investigations, Western Arctic Canada

In 1999, research was concentrated at Illisarvik, because bad weather meant there could only be a day or two on Garry Island. At Illisarvik the study continued to look at the state of the drained lake, 20 years after the experiment began. The purpose was to monitor the growth of a pingo, which is rising steadily in the lake bed, and to measure ground expansion and contraction on each side of the ice wedges. Holes were drilled in the lake bed to see how deeply permafrost has aggregated since 1978, and temperature cables installed to monitor ground temperatures in the lake bottom. Ice in the pond at Illisarvik domes up every winter as pure water is added from aggregating permafrost. A gauge developed in the pond water over the winter and in the pond registered over 1-1/2 atmospheres of pressure. The lake bottom temperature falls below 0°C, due to salt from the ground water preventing the pond water from freezing.

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033 Physical Sciences

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Reference No: 12 404 534
Region: IN Location: Cache Creek Basin, Aklavik Range

Paleo-hydrology in the Arctic

Work done in 1999 was a continuation of the project studying the impacts of climate warming on the hydrology of permafrost areas in the western Arctic. This study looked at calcite mineral deposits in the fissures of limestone rock, which were formed by ground water during warm periods in the past. During these times, permafrost was much lower and there was more ground water flowing in the shallow subsurface. Measurements of the stable isotope of carbon (^{13}C) indicate that these 'calcretes' are formed by the activity of methane-producing bacteria which live off organic material that comes from the surface. The oxygen isotopes in the calcite holds temperature information, and shows that the climate was on average about 6°C warmer than today, which is the amount of warming currently predicted for the western Arctic. Samples were collected from a new site in the Campbell Lake area south of Inuvik. The calcretes found there were formed during the last warm period or 'hypsithermal' at about 7,000 years ago. Continuing work at this site will help define the hydrological conditions during this warm period, and help predict the potential impacts of modern global warming on Arctic hydrology.

034 Physical Sciences

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Reference No: 12 404 528
Region: IN Location: Thunder River, Mountain River and Old Fort Point

Stability of Permafrost Slopes in a Warming Climate

Seven weeks were spent in 1999 investigating landslides easily approached by boat along the Mackenzie River. To better understand the impact of forest fire destruction of ground cover, temperature recorders were installed in several recently burned and nearby unburned areas. To see if climate changes have any role in favoring landslides, trees disturbed by ground movements were dated using tree ring methods. Nearby undisturbed trees were also sampled to allow climate reconstruction from tree ring measurements. Comparing dated movements with these reconstructions may show now of the important climate change as a landslide trigger. To help predict slope stability, several recent slides in high silt and sand banks along the Mackenzie River were surveyed. A topographic profile was continued out into the Mackenzie River by means of a boat-mounted echo sounder. This component of the work will improve the accuracy of slope stability calculations by providing in-field, rather than laboratory, determinations of frozen soil strength. In general, this work will contribute to the knowledge of permafrost terrain sensitivity to climate change and forest fire. It will also improve the understanding of slope stability from an engineering point of view by providing estimates of mechanical properties based on field measurements

035 Physical Sciences

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Reference No: 12 404 425
Region: NS Location: Daring Lake Tundra Ecosystem Research Station

Hydrological and Sediment Geochemistry Investigations at Daring Lake, N.W.T.

Research done at Daring Lake, N.W.T., located in the Slave Geological Province of the Coppermine River Basin (64° 52'N, 111° 35'W) in the summer of 1999 looked at the hydrology and energy budget of an Arctic esker lake and sediment export to the larger Daring Lake System. At the sub-basin scale of study, transects were established on three hill slopes varying in aspect and vegetation composition. At three sites along each transect, soil temperature and water content were modified periodically at various depths. Continuous measurements were made using data loggers at a meteorological station located within the basin. Daily measurements of active layer depth and albedo were recorded at sites along the transects throughout the study period (June 21- August 17, 1999). These measurements were used to calculate the energy budget and hydrological balance of the esker lake. Furthermore, sediment samples were collected periodically throughout the study period from the lake bottom and from input streams. Sediment export from the monitored basin was examined and related to sediments obtained from Daring Lake. By joining knowledge gained at the sub-basin scale of study with a larger system, a better understanding of how a computed/measured energy and hydrological budget relates to sediment export from a terrestrial tundra catchment will be developed.

036 Physical Sciences

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Reference No: 12 410 559
Region: IN Location: Sachs Harbor

Inuit Observations on Climate Change

The International Institute for Sustainable Development (IISD) is working in partnership with Inuvialuit from the community of Sachs Harbour (especially people whose livelihoods are based on the land) to record their observations of climate change. This project has two goals: (1) to produce a video that will demonstrate to Canadian audiences, interest groups and decision-making forums that climate change is having an effect on the traditional lifestyle and livelihood system of Inuvialuit on Banks Island; and (2) to gather Inuvialuit traditional knowledge regarding climate change and to explore the contribution that traditional knowledge, local observations and adaptive strategies can make to scientific research on climate change in the Arctic. An initial workshop in Sachs Harbor, in which the community took part, was held to identify those areas related to climate change that would be studied, and to organize the study program. The project team then went into the community, to make (and videotape) observations on the areas being studied, and to conduct interviews with community members. This work focused on three areas: (1) direct climate-change consequences such as earlier freezing and thawing; (2) indirect climate-change consequences such as the appearance of new plant and animal species; and (3) adaptive strategies that the Inuvialuit have developed to deal with these changes. A final trip to Sachs Harbor is planned for the end of May 2000 to complete the video documentation and scientific interviews. When the video and report are completed, the team will hold a stakeholder workshop to plan (with community approval) public awareness events and activities that focus on the video.

037 Physical Sciences

Good, Ron
Natural Resources Canada
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Reference No: 12 404 445
Region: IN Location: Mallik L-38 drilling site, 69 27' N 134 39'25" W

Feasibility of High Resolution P- ans S- wave Seismic Reflection to Detect Methane hydrate

This study looked at using seismic reflection to detect methane hydrate in the ground and determine whether it's application is feasible or not for future use. Specifically high resolution seismic reflection techniques were used to show interfaces within the gas hydrate interval at the site on the northeast edge of the Mackenzie Delta, NWT. Reflections were recorded with a high frequency vibrator to depths in excess of 1000 m. Resolution potential is well within the minimum for depicting individual hydrate zones within the nearly 300 m thick hydrate rich interval. This means that an accurate picture of these zones can be generated. Several high amplitude, high frequency reflection events are interpretable within and immediately below the nearly 600 m thick permafrost and as well can generate a good picture of these zones.

038 Physical Science

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Reference No: 12 404 539
Region: DC Location: Fort Simpson Airport

Radar Observations in Support of the Mackenzie GEWEX Study (MAGS)

The Mackenzie GEWEX Study (MAGS) is the Canadian component of an international effort called the Global Energy and Water Cycle Experiment (GEWEX). GEWEX supports a World Climate Research Program to observe, understand, and model the hydrological cycle and energy fluxes in the atmosphere, at land surface, and in the upper oceans. The goal of the program is to reproduce and predict, by means of suitable models, the changes in the global hydrological cycle, its impact on atmospheric and surface dynamics, and changes in regional hydrological processes and water resources and their response to changes in the environment, such as the increase in greenhouse gases. McMaster University's role in MAGS involved the location and operation of its experimental radar which measured both precipitation and cloud properties within 75 km of the Fort Simpson airport. Radar measurements were taken during both the initial (September-October and December 1998) and final (April/May 1999) experimental periods, after which the radar system was returned to McMaster. Radar measurements taken are currently being analyzed, to better understand and characterize the cloud and precipitation systems encountered at Fort Simpson during field experiments, and to develop and validate models applicable over larger regional areas. For more information on MAGS, please visit the following website: http://www.mscsmc.ec.gc.ca/ GEWEX/MAGS.html

039 Physical Sciences

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Reference No: 12 404 525
Region: NS Location: Along Echo Bay's winter road from Tibbit Lake to Contwoyto Lake

Magnetotelluric Studies along the Lupin Mine winter road - Phase II

This study looked at the structure and composition of the earth's crust and upper mantle to depths greater than 200 km along the Lupin Mine winter road east from Yellowknife to Contwoyto Lake. This work, which defined the base of the Slave Craton, the oldest of the earth's fundamental building blocks, was an important component of the National LITHOPROBE Program. At approximately 20-25 locations along the 600 km winter road, sensors which were able to measure and record the Earth's natural electric field were lowered through small holes drilled through the ice onto lake bottoms. The recordings at each site took 1-3 weeks, after which all equipment had been removed from the recording locations.

040 Physical Sciences

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Reference No: 12 404 525
Region: DC Location: Fort Liard area, along NWT highway 7

Magnetotelluric survey in Northern British Columbia and the Yukon

This study looked at the structure and composition of the earth's crust and upper mantle to depths greater than 60 km in northern British Columbia, the NWT and the Yukon. This work is part of the Slave Northern Cordillera Lithospheric Evolution (SNORCLE) components of the national Lithoprobe program, which is aimed at understanding the tectonic evolution of the North American Continent. At eight locations along the NWT Highway 7, sensors able to measure and record time changes of the Earth's natural electric field were lowered into small (1 m long x 25 cm wide x 25 cm deep) holes dug in the ground. Recordings at each site took between 1-8 days, after which each site was restored to its original condition.

041 Physical Sciences

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Reference No: 12 404 546
Region: IN, SA Location: the Fort Good Hope area

Fort Good Hope, NWT Aero-magnetic Survey: Phase II of Mackenzie Corridor Survey

The Geological Survey of Canada (GSC) continued with Phase II of the multi-year airborne magnetic survey of the Mackenzie Corridor Region of the Northwest Territories during the summer of 1999. The 1999 survey was carried out on the boundary of 1998, Norman Wells survey and was entirely airborne (with no land access). The purpose of this survey was to improve public access to knowledge and understanding of the area's geology, as no publicly available magnetic survey coverage exists. The survey recorded the changes in the earth's magnetic field caused by magnetic minerals contained in the rocks of the earth's crust. Patterns obtained are indicative of the subsurface geological structure, which is an important element of geological mapping and resource exploration. The cost of data collection was funded by the GSC, which was responsible for preparation of the survey contract, monitoring of the survey operation and public distribution of the data. The aerial survey was operated out of Norman Wells by Questor Surveys Limited of Calgary (the Canadian subsidiary of World Geosciences Corp.). Approximately 70,838 line kilometres of data were acquired. The survey digital data is currently being processed and the survey results, which will be published by the GSC as 18 colour contour aeromagnetic maps at a scale of 1:100,000, should be available by early 2001. Maps and digital data will be available from the Geophysical Data Centre, 615 Booth Street, Room 241, Ottawa, Ontario, K1A 0E9.

042 Physical Sciences

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Reference No: 12 404 550
Region: NS Location: Yellowknife

Surficial Geology and Till Sampling in the Yellowknife Greenstone Belt Area, NWT

Geological fieldwork around Yellowknife was done during the summer of 1999 to provide information on soils, ice flow history and soil geochemistry resulting from the effects of the last ice age (which ended about 8500 years ago). Because of the large area involved (nine 1:50,000 map sheets), travel was done by helicopter and plane. Soil and humus samples were collected for geochemistry studies, while pebbles were collected for glacial transport investigations. Some larger soil samples were collected for kimberlite indicator mineral analyses as part of a detailed study around Drybones Bay. Silty clay deposited thousands of years ago by a large lake, much bigger than Great Slave Lake, is common in low valleys and outcrops below 280 m elevation. A mixture of stones, sand and silt forms a deposit called diamicton (till) which was left behind by the glaciers as they eroded bedrock. This work is important because analysis of soil samples looks at economically important elements (*e.g.* gold), as well as potentially harmful ones (*e.g.* arsenic). This may also help other geologists look for striations (scratches) made in the bedrock by glaciers, which generally advanced from the northeast towards the southwest.

043 Physical Sciences

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Reference No: 12 404 116
Region: SA Location: 250 km south-west of Tulita

Ecological and Geomorphological Investigations in the Alpine Tundra of the Mackenzie Mountains, NWT

In 1999, researchers were present in the Canol study area from 11-15th of August. The main purpose of the study field trip was to get microclimate data from the six automated data recorders that have been maintained since 1990. Temperature (soil and air), wind speed, global radiation, precipitation and snow pack depth data were retrieved from all data recorders. Some animal damage, which was insufficient to damage the recorders, was experienced at three sites, while several of the snow depth gauges were damaged beyond repair. Thaw depth monitoring continued, and a full survey was conducted on the six study features. Next year will be the tenth data collection season completed. Detailed analysis of data collected during the past decade will be the main focus for 2000-2001 season.

044 Physical Sciences

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Reference No: 12 404 116
Region: SA Location: 250 km south-west of Tulita

Studies of the Environmental Effects of Disturbances in the Subarctic (SEEDS)

On 7 June 1995, a forest fire burned through the SEEDS camp and research site established 10 km north of Tulita in 1984. During May 1996, the research site was reactivated with new automated weather stations and an unburned forest site (3km north of the original site) was instrumented for comparison. Research initiated in 1996 has continued to present. In February each year, the camp is re-supplied by snowmobile and toboggan from the winter road. At that time, detailed snow sampling is also done to compare the snow pack on the burned and unburned areas. While the 1999 summer field season (16-23 August) was short, the automated microclimate stations were serviced and data in memory retrieved during this period. Permanently-marked thaw depth probe sites were measured across the site. A new set of sensors was installed to measure snow pack depth and more soil temperature sensors were added. Thaw depth measurement is increasingly difficult since depths on portions of the site exceed our ability to probe. At depths greater than approximately 1.75 m it is physically difficult to insert the probe and at this depth it is common to encounter a gravel layer that prevents further probing. Another small mammal trapping session was completed. Small mammal numbers remained high but lower than the peak in 1998. Further work was done on the base camp to protect goods stored on the site. The electric bear fence was checked and a new battery was installed.

045 Physical Sciences

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Reference No: 12 404 485
Region: IN Location: Mackenzie Delta near Inuvik

Bio-geochemistry of Lakes in the Mackenzie Delta

This research was completed to develop a model of the interacting bio-geochemical and hydrological processes that control nutrient balance and primary productivity in the lakes of the Mackenzie Delta Region. Data collected during this project will help develop a more general model for lakes associated with the flood plains and deltas of major world rivers. The study consisted of lab and field work that concentrated on small lakes in the Mackenzie Delta near Inuvik. Field work involved day trips by boat or helicopter to a small cluster of 6-9 lakes just north of Inuvik along the east channel of the river. Instrumentation was set up to continuously measure the transparency of the water at each monitoring site. Each lake was visited by boat every two weeks, to collect the light meter data, and samples of water, algae and sediments for analysis in Inuvik. Another set of 20 lakes west of Inuvik and along the East Channel were examined in August. In these lakes only one sample of aquatic plants was taken at each lake.

046 Physical Sciences

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Reference No: 12 404 378
Region: IN Location: Trail Valley and Havipak Creeks

Snow Accumulation/Runoff in High Latitude Permafrost Basins

Detailed field studies were done in the Inuvik area during 1999, looking at factors controlling the movement of energy and water between the land surface and the atmosphere during the spring snow melt period. These factors control both the supply of energy and water to the atmosphere, as well as snow melt (and therefore spring runoff) in streams and rivers. The long term objective of these studies is to improve the ability to predict weather, climate and water resources. With future uncertainties in climate, and with potential development projects being able to predict better is essential in order to properly manage, and to adapt to, future environmental change. Work in 1999 concentrated on measuring (or estimating) all water entering into and being stored in the two research basins (Trail Valley Creek and Havikpak Creek). This included snowfall, blowing snow into/out of the basin, sublimation of snow during blowing events, rainfall, evaporation, stream flow and meltwater storage. Results from 1998 clearly show that storage of meltwater in snow pack, unfrozen soil and stream channels can be very large. This results in a long delay between snow melt and stream runoff. Ongoing work will compare results from a number of different years, so that we can understand the changes from year to year and compare results from areas on either side of the tree line. This work provides important data needed to test computer models used to predict the impact of climate on these environments. In addition to this work, analysis on the timing and magnitude of spring break in the Mackenzie Delta has been looked at since the mid 1960's. This work has clearly shown that the date of spring breakup has increased dramatically, with breakup occurring some 2 to 3 weeks earlier than in the 1960's while there has been no observed changes in the magnitude of the spring peak water level.

047 Physical Sciences

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Reference No: 12 404 538
Region: IN Location: Mason Bay, Richards Island, Central Eskimo Lakes

The Origin of Deformed Massive Ice, Pleistocene Mackenzie Delta, Western Canadian Arctic

In the Mackenzie Delta Region, there are many large bodies of underground ice. The ice is commonly 10 or more meters thick, folded and underlies areas equivalent to several baseball fields. Two main suggestions for the origin of this so-called 'massive ice' are: (1) that it represents buried remnants of Ice Age glaciers; or (2) that it formed during the growth of permafrost. Deciding which of these two possibilities is the right one is essential to reconstruct ice-age history and examine environmental change in the Mackenzie Delta Region. Field observations suggest much of the massive ice in the northeast Richards Island area is of glacial origin. This ice commonly contains and underlies glacial sediment. Furthermore, the ice-sediment mixtures, the orientation of elongate stones in the ice, and the folds within the ice are very similar to those at the base of the modern Greenland ice sheet. However, in addition to this buried glacier ice and often occurring very close to it, there is a significant amount of ice which contains little sediment and has not been folded. This second type of ice developed after the former Canadian ice-sheet ceased moving, and probably formed during permafrost growth.

048 Physical Sciences

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Reference No: 12 412 040
Region: SA Location: Mackenzie Mountains

Proterozoic Reefs in the Mackenzie Mountains

The biggest ice age in Earth history occurred 600 million years ago, and is often called the "Snowball Earth". In early August, limestones that cap deposits of this ice age were examined near the Ravensthroat River, in the central Mackenzie Mountains. These limestones show many unusual features related to the global ice age that preceded them. Among the most unusual were reefs up to 100 m in diameter and 25 m high composed entirely of stromatolites (layered rocks) made from crystals of the mineral aragonite. These reefs are more than 100 million years older than the oldest known corals, and provide an important insight into how reefs grew before the appearance of shelled animals. Smaller examples of these reefs cap ice-age deposits of the Snowball Earth in southern Africa, but the examples we discovered in the Mackenzie Mountains are the largest and most spectacular occurrence of aragonite-crystal reefs anywhere in the world.

049 Physical Sciences

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Reference No: 12 402 544
Region: IN Location: Inuvik

Airborne Observations of Surface-Atmosphere Energy Exchange over the Mackenzie Basin

A Twin Otter research aircraft was used to collect measurements of radiometric surface properties and surface-atmosphere exchange of sensible and latent heat and carbon dioxide (CO_2) at temporal and spatial scales suitable for testing models based on remote sensing and numerical simulation. The first conclusions showed that absolute energy exchange (particularly sensible heat flux) differs greatly between forested and non-forested areas at the time of full and partial snow cover, due to low albedo of coniferous trees for shallow sun angles. Deciding whether the land is tundra or forest, in land cover classification schemes based on remote sensing, is important to turn these findings to a larger scale. Successful scaling up on the basis of soil-vegetation-atmosphere-transfer (SVAT) schemes in this landscape requires a good understanding of the interaction between surface/subsurface moisture status (including the melting of permafrost) and the physiological response of vegetation; and the thermal properties of this highly porous and often waterlogged surface and its response to changing radiation conditions. The dynamics of these interactions must be expected to be highly variable temporally and spatially

050 Physical Sciences

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Reference No: 12 404 547
Region: IN Location: Mould Bay

Water Quality Assessment and Climate History of Mould Bay Ponds and Streams

Field sample collection of pond and stream water, as well as sediments, were collected at Mould Bay from July 12-20, 1999. Samples were collected from 34 sites within a 10 km radius (approximately) of the Mould Bay Atmospheric Environment Service station. At each site, water samples collected were looked at for a series of chemicals in a field laboratory. Later; a more detailed analysis was carried out at the National Water Research Institute and the results will be reported once finished. One interesting feature was that, although overall water quality seems high, there were elevated nutrient levels in the water of many ponds. This may be due to the large number of animal droppings in the area. Diatom communities (microscopic algae used as indicators of environmental change) were also sampled from sediment, rock, and moss substrate at each site. Finally, sediment cores were taken from two ponds in the Mould Bay area, which will be dated using lead (^{210}Pb), and their historical diatom communities examined in an attempt to understand long-term environmental change. Analysis of the Mould Bay diatom samples is presently ongoing, but the first results show that the region has a diverse diatom flora, with over 200 diatom species present. In addition, while the Mould Bay diatom communities show have many similarities with other high arctic sites, Mould Bay also has diatoms that have not yet been found elsewhere in the High Arctic. This research can help predict water quality.

051 Physical Sciences

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Reference No: 12 404 535
Region: NS Location: Lower Carp Lake

Hydrologic Investigation of a Canadian Shield Basin

The objective of the project was to look at northern Canadian Shield water flow (specifically spring snow melt runoff and seasonal evaporation), to see how and when water will flow from hill slopes into lakes. During the spring of 1999, an intensive field program took place at Lower Carp Lake when two people camped at the site for a month measuring snow depth, snow melt, runoff, evaporation and stream flow. There were four more trips into the site during the summer to maintain automatic weather stations at the site. Results from 1999 confirm results from 1998, which showed that little evaporation occurs during the April and May snow melt period. Evaporation rates increase and precipitation decreases in June and July. Water stored in the soil is at its lowest during these two months. In contrast, river water levels are at their highest in June and early July, as water from snow melt reaches the major streams such as the Yellowknife and Cameron Rivers. As the days get shorter in August and September, evaporation decreases as the sun gets lower and temperatures decrease. Precipitation tends to increase at this time, increasing water in the ground and sometimes, creating water flow on hill slopes and raising lake water levels. A large amount of rainfall is needed to make water flow off hill slopes, and an even larger amount is needed to increase stream flow from lakes. This suggests that water flowing off hill slopes does not always reach larger lakes and streams. The amount of precipitation needed to increase stream flow from both hill slopes and large lakes and streams depends on: (1) evaporation; and (2) storage of water in soil and rock fractures. It was observed that a significant amount of water seeps into the ground where bedrock is exposed, primarily because it occupies high points of land. The amount of water that seeps into this exposed bedrock areas depends on the width of the fractures in the rock. This research is still ongoing.

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Reference No: 12 404 319
Region: IN Location: Inuvik, Tuktoyaktuk, North Head, Tibjak Point, Atkinson Point, Tent Island, Taglu Island, and Ellice Island.

Understanding Coastal Change along the Beaufort Sea Coast

During the past year aerial video was taken along the Beaufort Sea coast from the Yukon/Alaska border to Cape Dalhousie. Data collected was used to construct a coastal map and database describing the distribution of different coastal types and land forms found along the Beaufort, and will be used to define the sensitivity of different coastal types to climate change. Ground surveys were also conducted at monitoring sites along the coast, to observe changes which have taken place since the last surveys (1-3 years). Coastal changes (erosion and accretion) are caused by the energy contained in waves and currents interacting with the frozen materials found along the coast. Our research team has been compiling all the available data on storms, sea ice, ground ice, and water levels., which determine the energy available for causing coastal change. These factors seem to change from year to year. This research will continue to look at this data to find out how the coast has responded in the past so that it might be possible to predict how it will respond in the future.

053 Social Sciences

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Reference No: 12 410 560
Region: SS Location: Hay River

Converging Ecological Currents: A First Nation Eco-visitor Strategy

The purpose of this field research was to provide information to form a strategy to help the Dene identify steps required to develop successful eco/cultural tourism ventures. Data collection took place first on the Hay River Dene Reserve and in the City of Yellowknife. Individuals were also interviewed in the communities of Enterprise and Fort Smith. Letters of consultation were sent to the Chief and Councils in each community prior to the interviews taking place. Letters of consent were obtained from all interviewees. Those interviewed included: (1) staff at the Dene Cultural Institute (DCI); (2) tourism operators; (3) staff of non-governmental organizations; (4) government officials; and (5) individuals. Data collection involved non-structured and semi-structured interviews. Research was centered on existing or prior eco/cultural tourism activities, and efforts to support these activities. Key informants were asked questions about their eco/cultural tourism experiences, the challenges that they faced, approaches they used to overcome these challenges, their effectiveness and related trends and current issues. The first findings show that eco/cultural tourism is slowly emerging in Denendeh, that a wealth of human talent exists, and that there is a pressing need for support of these activities.

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Reference No: 12 410 563
Region: IN Location: Inuvik

Information-seeking Processes of Junior High Students: A Case Study of CD-ROM Encyclopedia Use

Junior high students in this study used a variety of information-seeking processes while searching for information on CD-ROM encyclopedias. The participants tended to perform three main processes: (1) enter search terms; (2) scanning the list of retrieved topics to find a relevant article; and (3) reading, skimming or scanning through article outlines and articles to find answers. Sometimes, the participant had to return to the list of retrieved topics many times after being unable to locate the article that contained the answer. Sometimes, the participant had to type in several search items, or look through many articles and article outlines to find the answer. These three processes seem to be the most important to the search. Skills can be taught to help students be more successful at each step. The information-seeking processes were the same over all three search sessions. They continued to: (1) type in a search term; (2) select relevant topics from the retrieved list; and (3) skim, scan and read articles and article outlines. The only changes noticed were better selection of search terms; and more confidence with navigation. At the end of the study in Inuvik, there was a sense that some of the ideas came from the participants themselves, others came from the interviews with key informants and still others came from observations of the students and discussions with them as they searched. These factors included: (1) finding the right keyword; (2) generating other search terms if the first one was unsuccessful; (3) patience and perseverance; (4) previous computer experience; (5) asking questions while searching and using that new information in the later searches; (6) reading ability, skimming and scanning skills; and (7) understanding the differences between an encyclopedia and the internet.

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Reference No: 12 410 554
Region: IN Location: Inuvik

An Investigation of Tourist Motivations for Travelling to Arctic Canada

This study found that tourists were most frequently on holiday for approximately one month, with most planning to spend 2 days in Inuvik. About 65% were travelling by road and 30% by air. Motivating factors identified (in descending order of importance) were as follows: (1) driving the Dempster Highway; (2) travelling North of the Arctic Circle ; and (3) an interest in the culture of aboriginal peoples. Fort McPherson had been visited by over 50% of tourists surveyed, while about 30% had visited Tuktoyaktuk. Another 27% of tourists surveyed stated that they planned to visit Tuktoyaktuk during their visit. Only 3% had visited Aklavik. Over 80% of tourists surveyed stated that the Mackenzie Delta region was not the only planned destination on their holiday. The Yukon was the most frequently quoted destination that would also be visited, closely followed by Alaska. Those travelling to Inuvik by plane were more likely to spend their entire trip in the Mackenzie Delta region than those travelling by road. Other reasons identified for visiting the area on holiday (besides those listed on the questionnaire) were connected with keen interest in natural environment, and with adventure.

056 Social Sciences

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Reference No: 12 410 564
Region: IN Location: Yellowknife, Lutsel K'e

Deafness in a Northern Indigenous Community: Parent Perspectives on Supports and Services

The study was designed to examine the extent of availability, accessability, quality and distribution of education resources on deafness and level of user satisfaction within the Aboriginal population in the north. The study began by conducting a literature review in the NWT and meeting with key research participants. Dialogue began with the NWT Council for Disabled Persons while in Yellowknife. While visiting Lutsel K'e discussion of the research project was held with the Chief and Council, with the Director and Staff of the Health and Social Services, with the school staff and with Elders in the community. Interviews were conducted and the community groups were given an update prior to leaving the community.

057 Social Sciences

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Reference No: 12 410 551
Region: IN Location: Inuvik

Aboriginal Concepts of Power and Empowerment Models of Wellness

The objective of this study was to develop a description of how four Inuvialuit women think of and experience power, powerlessness, control and empowerment in their lives as a result of their culture. All previous descriptions of personal power and empowerment had focussed on non-aboriginal culture and descent. This research was motivated by the fact that descriptions of thoughts and experiences of power and empowerment of four Inuvialuit women would assist persons working in fields of health promotion and adult education. These results could help workers in these fields recognize any potential differences thereby reducing the probability that they would try to impose their own power concepts onto Aboriginal persons with whom they work. The data was a collection of the four women's own thoughts on personal power and empowerment and is forming a bridge between aboriginal and non-aboriginal women.

058 Social Sciences

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Reference No: 12 410 556
Region: IN Location: Inuvik

Innuktitut Verbs

In 1999 a visit to the community of Tuktoyuktuk, NT was made in order to investigate some properties of Inuvialuktun and Inupiaq. The purpose was to research how different Inuit dialects form questions. In particular grammatical questions where nous would get marked with the ending *-mik*, as in *iglumik*. A comparison of Inuit dialects for this factor is currently being done. The study found that Inuvialuktun can have different markings, depending on the meaning of the question. It was also found that people's names are not usually used with *-mik*. It is hoped that the research will continue and eventually the stories will be transcribed to computer format and made available to the community.

059 Social Sciences

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Reference No: 12 410 555
Region: IN Location: Fort McPherson, Aklavik

Sustainability of Arctic Communities

Just under four years ago, 23 researchers representing 8 natural and social science disciplines and four partner communities- Aklavik, Fort McPherson, Old Crow and Arctic Village - set out to look at how the combined effects of climate change, oil development, tourism and government cutbacks might change the sustainability of Arctic communities. Researchers and community members have worked together to incorporate research and local knowledge-based understanding into a common tool - a SYNTHESIS MODEL - to examine the sensitivity of relationships and assess levels of uncertainty. Local policies and the limitations of science and local knowledge in predicting the future were discussed. This project modeled vegetation changes, caribou population dynamics, local labor markets, mixed subsistence and cash economies, and oil field-caribou interactions. The Sustainability Project is a new approach to regional integrated assessment (IA). The team tried to build on solid, disciplinary science, and a wealth of local knowledge concerning environmental change and human adaptations to such change. Workshops and individual initiatives were used to develop simple models that focus only on the relationships important to the small set of questions examined. The focus was on the value of assessments as a springboard for understanding alternative futures rather than trying to predict the future.

060 Social Sciences

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Reference No: 12 410 565
Region: NS Location: Yellowknife

Establishing Key Factors that Enable Selected Northern Metis Students to Succeed Academically in Southern Post-secondary Institutions

The focus of this project was to establish the key elements that enable selected northern Metis students to succeed academically in southern post-secondary institutions. The study concentrated on the achievements and strengths of northern Metis students as they pertain to education. Students that were at the time attending post-secondary institutions were selected. In-depth interviews were done using the self-narrative approach. The Metis Nation will use the outcome as a guide for overall planning, thus empowering and strengthening the future of Metis students and the Metis Nation.

061 Social Sciences

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Reference No: 12 410 557
Region: DC Location: Fort Simpson

The Consequences of the Berger Inquiry

This project examined two distinct periods prior to and after the Berger Inquiry. The goal was to determine whether politics in the 1960's and the trial outcome of the Berger Inquiry in the 1970's had an effect on culture and lifestyle of the people of Fort Simpson. Two groups of people were interviewed during this study: 1) Elders who at the time lived in Fort Simpson; and 2) Individuals who lived in the community immediately after the Berger Inquiry. All participants in the study were interviewed at their own convenience to better understand their unique perspectives, values and life experiences. The nature of the study was completely disclosed to all the participants who were given a participant contract before beginning all interviews.

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Reference No: 12 410 558
Region: NS Location: Yellowknife

Public Sector Labour Organization in the Northwest Territories: 1965-1984

The Union of Northern Workers (UNW) project is a master's thesis in history expected to be completed by Fall of 2000. The study is divided into five chapters, and argues that the union is defined as much by its relationship with the broader labour movement as with the employer. The first chapter looks at background of labour unions in the Northwest Territories prior to 1967 and the emergence of public sector unions in Canada. Largely based on already published material, some old newspapers found in the Northwest Territories Archives explain the earliest union organized in Yellowknife, by the International Union of Mine, Mill, and Smelter Workers. As a union with strong ties to the Communist Party of Canada, it can be argued that the Party is in fact the founder of the northern labour movement. Chapter two, drawing largely upon material found in the NWT Archives' UNW Collection, and supplemented with interviews with some of Yellowknife's long resident labour activists, show how with the movement of capital to Yellowknife in 1967, the rapidly growing territorial civil service quickly became unhappy with their new employer. With the assistance of the Public Service Alliance of Canada (PSAC), and a Commissioner with a long personal history in the labour movement, these workers formed the Public Service Association, a member of the PSAC. The next two chapters deal with 1970s and 1980s, and are based on materials in the UNW collection, as well as interviews with current and past northern labour leaders. During the 1970s, the NWTPSA experienced a sometimes troubled relationship with the PSAC. This relationship improved when the two parties came together to fight bitter court battles with the employer in 1978 over the legislated removal of rental rates from the collective agreement. The 1980s are characterized by the union's role in the NWT Federation of Labour, and its aggressive organizing of workers outside the employ of the GNWT, resulting in changing the name to Union of Northern Workers in 1987. The final chapter shows increasing tension with both the PSAC and the Federation of Labour. These conflicts along with internal tensions and an aggressive two pronged legislative and bargaining assault by the GNWT, lead to the decision to divide the union at the 1996 convention. This research shows that since the granting of collective bargaining rights to the NWTPSA in 1969 to the decision to divide the UNW in 1996, the union was characterized as much by conflict with other labour organizations as with the employer.

063 Social Sciences

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Reference No: 12 410 558
Region: IN Location: Holman

Learning What's Labour–the Changing Nature of Work, Leisure and the Good Life in the Central Canadian Arctic

Data was collected looking at employment opportunities, job turnover, social assistance, childcare availability, educational attainment, and traditional subsistence activities. Interviews were conducted with 25 adults regarding their experiences with wage employment as well as the managers of each work site in Holman. At first glance it seems that Holman has begun losing population to out-migration. It appears that several "quality of life" factors including employment opportunities are related to this change. There are few full time wage opportunities in Holman and nearly all of it is in the private sector. Less than 25% of the working age adults have full-time year-round employment, while approximately 30% are employed part-time or casually. While education is necessary for some positions, education in itself is not the key to employability. A large percentage of the permanent jobs are held by adults over the age of 30, who tend to have less formal education than younger adults. Adults between the ages of 18 and 30 appear to have the most difficulty finding permanent work. Lack of employment opportunities, and a shift away from subsistence activities, seems to be partly responsible for increased out-migration by the young. This work is ongoing and a visit to Holman in March, 2000 will follow up on questions raised during data analysis. As well, observations of seasonal variations in work activities will be made.

064 Social Sciences

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Reference No: 12 410 552
Region: ALL Location: All communities in Northwest Territories

Tobacco Use by Youth in the Northwest Territories

Approval of the regional education authorities was sought and given before 12,375 surveys were sent to principals of 83 schools (which taught students between grades 4- 12). Teachers ran the survey with voluntary response from students. The survey questions were the same as the ones used in the 1987+ 1993 surveys. Of the 83 schools to which surveys were sent, 68 schools (72%) responded, while 15 schools (18%) did not return the questionnaires. A total of 5,680 students participated in the survey. These students represented a school population of 10,418. A total of 5,235 students in the age range of 10-19 completed the survey representing a response rate of 53%. Results were entered by the NWT Bureau of Statistics. Data files were then sent to Ottawa to be analysed by the same Statistics Canada analyst who analysed the data from the other three School Tobacco Surveys. A draft report was written by the researcher and the analyst and was presented to Department of Health and Social Services. With the division of the NWT, it was decided that a separate report be redrafted to include results from only the present NWT. A Nunavut report would be written only if Nunavut request it. The NWT report is presently being drafted.

065 Social Sciences

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Reference No: 12 410 562
Region: IN Location: Inuvik

Implementation of Legal Obligations Under the Inuvialuit Final Agreement

The objective of this study is to ascertain the extent to which the legal obligations present to the Inuvialuit Final Agreement (IFA) are being implemented. Research methods for the 1999 field season were twofold: (1) make use of the library at the Aurora Research Institute and at the Inuvialuit Joint Secretariat to gain information not readily available elsewhere; and (2) to interview individuals who had been personally involved in the implementation of the Inuvialuit Final Agreement. With respect to the library research, a tremendous amount of useful information was found. The interview portion of the research was moderately successful. It was the intention to speak with about a dozen people, but for various reasons (illness, extended business out of town, other last minute responsibilities) only seven (7) people were able to be interviewed. The information provided was valuable and has proved useful.

066 Social Sciences

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Reference No: 12 410 561
Region: IN Location: Hay River, Fort Simpson, Fort Providence

A Transmission of Indigenous Knowledge of the Land: A Case Study of the Dene in the Deh Cho

The objective of this study was to determine how Dene in the Deh Cho pass on their knowledge of the land publicly in environmental hearings as compared to how they pass on that knowledge among themselves. Nine interviews were held with people who spoke during the Berger Inquiry and questions were asked concerning their preparation for speaking, whether or not they felt their concerns were heard and if there were aspects of their knowledge they felt were inappropriate to share in a public setting. Interviews were held in three separate communities and similar rules for public conduct from a Dene perspective emerged in each place. People felt that it was inappropriate, in a public setting, to ridicule another person, to speak of animals, and to discuss spiritual matters. Such findings have several implications when considering the environmental impact assessment hearing process. Exploring the passing on of Dene traditional knowledge is useful and beneficial for the Dene, the resource developers and for government regulators in the north by helping bridge gaps in communication and to ensure a better understanding of Dene practices, values and sites of importance.

Traditional Knowledge

067 Traditional Knowledge

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Reference No: 12 410 553
Region: IN Location: Ft. McPherson and surrounding area; Tsiigehtchic and surrounding area

Gwich'in Knowledge of the Land

The approach to investigating the knowledge of the land, was to spend time with knowledgeable Gwich'in on the land in different seasons. From July 13-27, Mary and William Teya of Fort McPherson, allowed researchers to participate in the activities of their fish camp. A trip up the Peel to the traditional fishing and winter trapping and hunting area of Mary's family on July 26. Activities and places were photographed and four hours of videotape was made. On August 5th, the study continued in Tsiigehtchic with Noel and Alice Andre at their fish camp at Moonshine Bay. The camp and activities were documented with still photography and video. Unfortunately, the expansion of the forest fire in the Tsiigehtchic area curtailed activity in the fish camp for part of the time. The fire did reveal other aspects of peoples' understanding of, and attitude toward, the land as people discussed the impacts of fire on lands and waters, and on traditional activities. There was one interview with Tony Andre in Tsiigehtchic during that period.

Prince of Wales Northern Heritage Centre
Archaeology Permits

068 Archaeology

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Reference No: 99-884 (PWNHC)
Location: North of Lac de Gras
Year of Research: 1999

BHP Ekati Diamond Mine Project

Jean Bussey directed archaeological investigations for BHP Diamonds Inc. in its claim block north of Lac de Gras. A number of archaeological tours formed part of the 1999 field work. The first tour involved Dogrib elder Edward Camille and his interpreter, Francis Blackduck. The second tour involved four members of the Yellowknives Dene First Nation: Mike Francois; Barney Masuzumi; Alfred Liske and Pete Martin. The third tour involved Pierre and Bertha Catholique of the community of Lutsel k'e. Numerous recorded sites were revisited and several new sites were discovered during these tours. As part of the 1999 field work, a number of sites were revisited to determine if they were within the boundaries of the BHP claim block. One site at the east end of Lac de Gras (at the narrows) and five sites along the Coppermine River west of Lac de Gras were revisited and updated information was collected. There is good potential for additional sites in both these areas and one new site was discovered at each location. Sixteen other sites were discovered in 1999. Most are located in a central portion of the BHP claim block, north of the BHP mine known as EKATI™. This brings the total of sites within the BHP claim block to 150 sites. The new sites are primarily surface scatters containing flakes of stone. Most are located in association with eskers or esker remnants and most are beside lakes, but one was found at the narrows of Lac de Gras. Most of the sites in the BHP claim block are sufficiently distant from proposed development activity so they are easily avoidable. Surface collection was undertaken at two sites threatened by a proposed road.

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Reference No: 99-885 (PWNHC)
Location: Snap Lake
Year of Research: 1999

Camsell lake Property - Snap Lake Project Area

Jean Bussey directed archaeological investigations for Winspear Resources Ltd. near Snap Lake, approximately 200 km northeast of Yellowknife. The fieldwork was a continuation of investigations started in 1998, which had been postponed due to the arrival of winter. The purpose of the field work was to see if sites were located near activities associated with diamond exploration. Four exploration areas were examined from the air and portions of three were studied on the ground. No sites were found although a variety of landforms were traversed on foot. Two proposed winter roads heading south of Snap Lake to two potential gravel borrows were also assessed from the air. Sections of one proposed road route and all portions of both gravel borrows were traversed on foot. One new site was discovered near the road route. Ten new sites were found within the boundaries of the proposed gravel borrows. The gravel borrows are located in two portions of a large east-west trending esker. The more westerly borrow contains three sites. Two sites consist of a surface scatter of flakes and one is an isolated find consisting of an unworked flake. Two are at the far eastern end of the borrow area and one is located at the western end. It was recommended that gravel borrowing be limited to the area between these sites. The more easterly of the two gravel borrows contains seven new sites. Two of these are surface scatters and another is a dense surface scatter consisting of stone flakes and tool fragments. The seventh site is an isolated find located in the eastern portion of the gravel. It was recommended that borrowing be restricted to the area east of the sites near the drainage.

Fedirchuk, Gloria
Fedirchuk McCullough & Associates Ltd.
Ste. 200, 1719-10th Ave.
Calgary, AB T3C 4C1

Reference No: 99-891 (PWNHC)
Location: Lac de Gras
Year of Research: 1999

Diavik Diamonds Project - Echo Bay Esker Area - Lac de Gras

A survey on potential borrow sources along the eastern shore of Lac de Gras was conducted on behalf of Diavik Diamond Mine Inc. The potential borrow sources were on a prominent esker, where the road to the airstrip associated with the Lac de Gras camp is located. Four sites were found during the field survey. One (LcNs-136) consists of an isolated flake of basalt, two are artifact scatters (LcNs-134, LcNs-135), and one is a large campsite (LcNs-133). The isolated find occurred on a narrow bench on the north slope of the prominent esker whereas one of the artifact scatters (LcNs-134) was found along the access road on top of the esker. Although the isolated find was exposed by natural processes, LcNs-134 has been disturbed through construction and maintenance of the access road. The remaining two sites are associated with the low esker knoll to the north. On the north side was another artifact scatter. This site, LcNs-135, had been exposed in an old bulldozer cut. Although testing on the site did not reveal any artifacts, it is likely that more intact areas of the site remain. The large campsite, LcNs-133, is situated on an low esker bench extending south from the esker knoll and overlooks an unnamed lake on the east. It has also been exposed as a result of either winter road construction or maintenance, perhaps both. Although not large, this site contains a quantity of material (predominantly artifacts of white quartz). Based on tentative identification of the style of projectile points recovered from LcNs-133 and LcNs-134, the remains appear to relate to occupations as early as 2500 years ago. Because potential borrow activities may occur during the winter of 1999-2000, controlled surface collection was conducted at each of the sites. In addition to the single flake collected from LcNs-136, 126 artifacts were collected from LcNs-135, 155 artifacts were collected from LcNs-134, and over 6000 were collected from LcNs-133. Limited shovel testing was also carried out to determine whether subsurface remains were present, the extent of such remains, and the depth at which they occurred. Intact remains were found only at site LcNs-133.

071 Archaeology

Friesen, Max
Department of Anthropology, University of Toronto
100 St. George Street
Toronto, ON M5S 3G3

Reference No: 99-883 (PWNHC)
Location: Cache Point, Mackenzie Delta
Year of Research: 1999

Qilalugaq Archaeology Project

The Qilalugaq Archaeology Project was three-year study of the Cache Point site on Richards Island in the Mackenzie Delta, Northwest Territories. During the three years of the project, the Cache Point site was mapped and four houses were completely excavated, including entrance tunnels, middens (garbage heaps), and kitchen structures. The artifacts and animal bones from the houses are currently being studied, and a detailed picture of early Inuvialuit lifestyles in the Mackenzie Delta is being formed. Three of the four excavated houses were occupied during a fairly brief period, probably between about 500 and 600 years ago. These houses all contain very similar sets of artifacts, including plain pottery fragments, many fish hooks, and arrowheads of a special type known as "ringed tang". Trade goods were abundant, with both copper and soapstone occurring in high frequencies. The fourth house contained different artifacts with much of its pottery containing intricate circular designs known as "Barrow curvilinear". The arrowheads were also different from the previous houses. This fourth place was probably earlier than the others by about 200 years. Inuvialuit living at Cache Point lived in driftwood houses excavated into the earth, usually with a single bench at the rear. These houses were entered through very deep entrance tunnels, and cooking was often performed in separate kitchen tents, accessed through special tunnels from the floor of the main house. Beluga whales and fish formed the mainstay of the diet, with other food sources such as caribou, seals, and migratory birds being less important. The early Inuvialuit of Cache Point also maintained active networks of trade and social ties with their neighbors, as indicated by the trade goods. In sum, Cache Point must have been a thriving Inuvialuit community with a rich social and economic life 500 years ago. The site was eventually abandoned, probably because beluga whales no longer ventured up the Mackenzie River as far as Cache Point.

072 Archaeology

Ronaghan, Brian
Golder Associates
10th Floor, 940 -6th Ave. SW
Calgary, AB T2P 3T1

Reference No: 99-889 (PWNHC)
Location: Fisherman Lake Area
Year of Research: 1999

Fort Liard Potential Routing Selection Program

Chevron Canada Resources plans to build a 36-km pipeline in the Franklin Mountains near Fort Liard, which would join an existing well south of Mount Flett and the Westcoast Transmission pipeline north of Fisherman Lake, near Pointed Mountain. An alternate route for the project would be an 8.5- km pipeline, north from the well to a Ranger Oil P66A pipeline just east of a saddle in the Liard Range. Areas proposed for development of the pipeline were looked at for sites of archaeological and cultural interest. The routes parallel the base of the eastern slopes of the mountains before crossing the southern part of the range to descend into the Fisherman Lake basin. Many sites are known to occur around the shores of Fisherman Lake but none of these will be affected because the pipeline is planned for areas north and east of the lake. The areas examined occur in dense forest, with several deeply cut stream valleys. No new archaeological sites were found but a traditional tent frame campsite was recorded along the northern alternate pipeline. This camp was used for fall hunting by the Johnny Klondike Jr. family in the 1980s. The pipeline route will be altered to avoid this site. The community advisors for this project said that most traditional use of the area took place on the shores of Fisherman Lake or along the Liard River and that there is little chance that the pipeline will affect important sites or areas.

Ronaghan, Brian
Golder Associates
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Calgary, AB T2P 3T1

Reference No: 99-890 (PWNHC)
Location: Fort Liard Area
Year of Research: 1999

Fort Liard Potential Routing Selection Program

Paramount Resources Ltd. proposes to build and operate the "Liard Pipeline Project" in the Liard Valley, located about 25 km south of the community of Fort Liard. This project consists of a series of gas flowlines (total 15 km) from eight well sites situated on a high, forested ridge and a 24-km long pipeline to the Maxhamish gas plant in British Columbia.. Paramount also plans to build an access road from Fort Liard to the well sites that includes a bridge over the Pettitot River. Brian Ronaghan and Louie Betthale of Fort Liard looked at areas proposed development areas for sites of archaeological and cultural interest. Mr. Betthale is an elder in the Fort Liard community and his family traps the area that will be affected by the southern portion of the pipeline. One previously recorded archaeological site (JbR- 4) in the hamlet of Fort Liard was revisited and assessed in relation to the proposed bridge and road. Two new prehistoric sites and three sites relating to traditional hunting and recreational use of the area by members of the Fort Liard community were recorded. JbRu-4 is one of a series of locations recorded in Fort Liard that confirm the area has been a traditional settlement area for thousands of years. This site has been heavily disturbed by road and airstrip construction and is of limited scientific value. The first new site is a disturbed campsite on the shores of a small lake and will be avoided by the pipeline proposed for the area. The second new site consists of a few stone artifacts that probably represent a short stop during travel along one of the small creeks in the area. The traditional use sites consist of: a small tent-like brush structure relating to an winter overnight stop while working a trapline; two platform caches for smoked meat probably used recently by the Bertrand family of Fort Liard (Louie Betthale, personal communication); and a brush covered tipi along the shores of a small lake probably used by local youths for weekend camping. The pipeline has been rerouted to avoid the last two of these sites. These sites provide physical evidence that the area west of the Pettitot River is still used by members of the Fort Liard community for traditional hunting, trapping and general recreation

074 Archaeology

Ronaghan, Brian
Golder Associates
10th Floor, 940 - 6th Ave. SW
Calgary, AB T2P 3T1

Reference No: 99-892 (PWNHC)
Location: Mackenzie Valley Winter Road Upgrade
Year of Research: 1999

Mackenzie Valley Potential Routing Selection Program
GNWT Department of Transportation proposes to upgrade portions of the existing Mackenzie Valley winter road by building new bridges at sixteen river and creek crossings and by putting culverts in thirteen smaller drainage crossings. This program will take place along sections of the road between Wrigley and Fort Good Hope. The program will make winter access better and will help in controlling erosion after spring-melt but will not change the winter-only status of the road. The locations of most crossings will stay the same. As part of a program to assess the environmental effects of this upgrade, Brian Ronaghan examined construction zones for historical resource concerns. Regional local communities were asked if anyone wished to work as field assistants on the project. John Lennie of Norman Wells helped the archaeologist and other members of the environmental team for the northern portion of the project. Although many archaeological and traditional use sites had been recorded in studies that took place before the road was built, most of these occur outside areas proposed for bridge construction. Some that were present on the road have been removed when the road was first built. Several sites near the road were revisited and will need to be avoided if construction extends outside the existing cleared areas. These include collapsed and standing cabins and the possible remains of a depression-era trading post. No new archaeological or traditional sites were found during this project.

075 Archaeology

Thomson, Callum
Jacques Whitford Environmental Ltd.
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Calgary, AB T2P 0T9

Reference No: 99-888 (PWNHC)
Location: Kennady Lake
Year of Research: 1999

Monopros Kennady Lake Heritage Resource Inventory
Callum Thomson did a heritage resources inventory for Monopros Limited, a Canadian diamond exploration firm with a regional office in Yellowknife. The project involved a 10-day boat and foot survey around Gahcho Kué (Kennady Lake), during which 44 new sites were found by Callum Thomson and Lutsel K'e residents Lorna and Lawrence Catholique. Most of the total of 44 new sites had evidence of use before the presence of Europeans, such as quartz and quartzite tools and tool-making debris. Several sites were located where quartz veins or quartz and quartzite boulders were present with, in most cases, clear evidence of extraction and use of these materials. Three sites contained features showing traditional use during the last two centuries or so: axe-cut wood and trees; a camp site located in a small stand of spruce trees; and part of a fox trap. Apart from the traditional use sites, which were probably used for winter trapping, most of the sites seemed to have been used for observation or interception of caribou, commonly on elevated knolls and terraces overlooking a lake or river where caribou would cross in spring or fall, and could be hunted in the water. This was found to match with migration routes traced during wildlife studies. Many of these pre-contact sites were found in clusters, with 5-8 located within a few hundred meters of each other, often around a lake narrows or in association with an esker. One site was situated where exploration drilling had taken place by the firm which had held the lease before Monopros, and several showed evidence of having had till samples extracted by exploration geologists. While displacement of archaeological materials at these sites seems to have been minimal, the finding of so many sites does support Monopros' commitment to conduct surveys of this type during the exploration stage to ensure that heritage resources are identified and safeguarded.

Thomson, Callum
Jacques Whitford Environmental Ltd.
Ste. 500, 703 - 6th Ave. SW
Calgary, AB T2P 0T9

Reference No: 99-887 (PWNHC)
Location: Mackay Lake to Kennady Lake
Year of Research: 1999

Nuna Winter Access Route Heritage Resource Inventory - Mackay Lake to Kennady Lake "Gahcho Kue"
A heritage resources inventory and preliminary impact assessment for Monopros Limited, a Canadian diamond exploration firm with a regional office in Yellowknife. Mr. Thomson and seven Yellowknives Dene from Dettah and N'Dilo canoed the 60 km from MacKay Lake to Munn Lake following the ice route used by the company in the winter of 1999 to transport materials to and from the Monopros exploration area at Gahcho Kué. Thirty-two new archaeological sites were recorded. The final phase of the work was a continuation of the canoe survey, from Margaret Lake to Gahcho Kué, a distance of 60 km. Callum, two members of the North Slave Metis Alliance and two residents of Lutsel k'e found a further 18 sites. Most of the total of 50 new sites contained evidence of use before the presence of Europeans, such as quartz and quartzite tools and remains of tool-making. One of the most interesting and potentially informative sites included a toboggan or komatik, with antler sled runners, a rectangular tent ring, and the remains of two sets of tent poles. This and most of the other sites seem to have been used for observation or interception of caribou, commonly on elevated knolls and terraces overlooking a lake or river where caribou would cross in spring or fall, and could be hunted in the water. Others also seemed to have access to good fishing places. Many of the sites were found in clusters, with several located within a few hundred meters of each other, often around a lake narrows or in association with an esker. Some were situated where shelter from the wind (behind an esker) may have been another reason why people chose to live there. One site was situated where exploration drilling had taken place, and several sites were located on the winter access route or at construction camp sites. While disturbance at these sites seems to have been minimal, it does indicate a strong need to do surveys of this type before the construction and use of winter ice routes.

Department of Resources, Wildlife & Economic Development
Wildlife Research Permits

077 Wildlife

Benn, Byron
Gwich'in Renewable Resource
Box 2240
Inuvik, NT X0E 0T0

Permit No: 2104
Location: Arctic Red River area between Tsiigehtchic and mouth of Cranswick River

Moose abundance and Composition in the Arctic Red River Area.
Moose
This study had the following objectives: (1) estimate the abundance of moose in the Arctic Red River study area; (2) to determine the composition of the moose population; (3) to evaluate information on the moose harvest and its effects on the moose population; and (4) to collect information on moose use of burn areas of known ages.

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078 Wildlife

Bergeson, Doug
Parks Canada
Box 750
Fort Smith, NT X0E 0P0

Permit No: 2061
Location: Slave River Lowlands

Little Buffalo Population Census
Bison
The purpose of this study is to complete a census of the Little Buffalo Herd in order to provide insight into population dynamics.

079 Wildlife

Branigan, Marsha
Resources, Wildlife and Economic Development
Bag Service #1
Inuvik, NT X0E 0T0

Permit No: 2085
Location: Richardson Mountains

Grizzly Bear Reproductive Rates and Cub Survival in the Richardson Mountains, NWT and YT
Grizzly Bear
This study monitored a minimum of 15 radio-collared adult grizzly bears over a 6 year period to determine: (1) the age at which females first start producing cubs that survive to weaning; (2) coy, yearling and two-year old litter size; (3) age of cubs produced each year that survive to weaning; (4) the number of cubs produced each year that survive to weaning (survivorship); and (5) for each female, the time interval (in years) between litters that survive to weaning (reproductive interval) would be determined.

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080 Wildlife

Carriere, Suzanne
Resources, Wildlife and Economic Development
Wildlife and Fisheries, Scotia Centre
Yellowknife, NT X1A 3S8

Permit No: 2080
Location: (lat. & Long.) 62.5 N and 113.3 W

Multi-disciplinary Study of Post-fire Effects on Taiga Shield Watershed
All Vegetation species, used by small mammals and bird
Wildlife studies were conducted in the Tibet Lake/Ingraham Trail area to learn more about the role that fires play in shaping the Taiga Shield. The knowledge gained will be used to compare the cumulative effects of human activities on the land to the natural landscape variation.

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081 Wildlife

Carriere , Suzanne
Resources, Wildlife and Economic Development
Wildlife and Fisheries, 600, 5102-50th-Ave.
Yellowknife, NT X1A 3S8

Permit No: 2096
Location: Norman Wells, Yellowknife, Tibbit Lake, Gordon Lake, Fort Smith, Fort Liard, Fort Simpson, Daring Lake

Northwest Territories Small Mammal Survey
Lemmings, mice, voles, shrews
Density indices for small mammal populations were studied. The objectives were to: (1) determine population cycles to predict harvest potentials of furbearers; (2) provide baseline ecosystem information; and (3) to test for the presence of antivirus in Deer mice.

082 Wildlife

Case, Ray
Resources, Wildlife and Economic Development,
Wildlife and Fisheries
6000, 5102 - 50th Ave.
Yellowknife, NT X1A 3S8

Permit No: 2054
Location: Slave Geological Province Area

Population Ecology of Grizzly Bears in the Slave Geological Province Area
Grizzly bear
This study was completed to: (1) identify population units based on long-term movements of grizzly bears; (2) define critical habitats; (3) determine the geographic extent of impacts of resource extraction activity; (4) describe seasonal range use and denning habitats; (5) and document seasonal forage selection and habitat use.

083 Wildlife

Cluff, Dean
Resources, Wildlife and Economic Development
North Slave Regional Office, P.O.
Yellowknife, NT X1A 2P9

Permit No: 2089
Location: Lac de Gras, Contwoyto and Clinton-Colden lakes area

Analysis of Esker Use by Wolves Denning in the Central Arctic, NT
Wolf
This study investigated use of eskers by wolves during their denning period. Wolves were radio-collared, to provide baseline information on their movements. This effort will help to identify critical habitat for wolves that may be sensitive to economic development.

084 Wildlife

D'Hont, Adrian
Resources, Wildlife and Economic Development
GNWT, 600, 5120-50th Ave
Yellowknife, NT X1A 3S8

Permit No: 2090
Location: Fort Smith, Fort Providence, Fort Simpson, Norman Wells, Inuvik, and Yellowknife

Hare Monitoring by Turd Transect
Snowshoe hare
The annual monitoring of long term transects, established for estimation of hare density and determination of hare population trend, was completed in this study.

085 Wildlife

Elkin, Brett
Resources, Wildlife and Economic Development
600, 5102-50th Ave.
Yellowknife, NT X1A 3S8

Permit No: 2097
Location: NWT-wide

Wildlife Health Monitoring - Testing from Sick or Dead Wildlife
All wildlife species
The study completed involved the monitoring of wildlife health in the NWT, through the collection and analysis of samples from sick or dead animals

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086 Wildlife

Gunn, Anne
Resources, Wildlife and Economic Development
600, 5102 50th Ave.
Yellowknife, NT X1A 3S8

Permit No: 2062
Location: Selwyn-Logan-Mackenzie Mountains, including eastern half of Nahanni national Park Reserve

Study of the South Nahanni Mountain Caribou Herd in the Selwyn - Logan - Mackenzie Mountains Area
Woodland Caribou
The study completed examined the following: (1) spring distribution; (2) calving distribution and cow-calf ratios in early summer and fall; (3) seasonal movements of the caribou; and (5) health status of the herd.

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087 Wildlife

Gunn, Anne
Resources, wildlife and Economic Development
600, 5102-50th Ave.
Yellowknife, NT X1A 3S8

Permit No: 2077
Location: Rae Edzo, Kugluktuk, Umingmatok, Cambridge Bay, Snare Lakes, Wha Ti, Rae Lakes and Lutsel K'e

Movements of the Bathurst Caribou
Caribou
Researchers collected data on the weekly movements of caribou from satellite collars, to describe the distribution around collared caribou throughout the year in order to relate movements to ecological conditions (plant growth, insect activity and snow depth).

088 Wildlife

Hazzard, Shannon
Gwich'in Renewable Resources
Box 2240
Inuvik, NT X0E 0T0

Permit No: 2084
Location: Summit Lake (438500 E 7511000 N), Loon Lake (444000 E 7513500 N), Horn Lake (45000 E 7514500 N)

Rat River Watershed Biodiversity Project
Birds, small mammals, larger wildlife
The Gwich'in Renewable Resource Board did a biodiversity study in the Rat River Watershed area with the intent to compile a species list of wildlife in the area. The information gained from this study will help to document the diversity of the watershed, and the reasons that the Gwich'in have for identifying this site as a protected area.

089 Wildlife

Hines, James E.
Canadian Wildlife Services
Suite 301, 5204-50th Ave.
Yellowknife, NT X1A 1E2

Permit No: 2068
Location: area within 400 m of each side of the Yellowknife Highway, from 16km west of the city to 48km west.

Abundance and Productivity of Waterfowl and other Aquatic Birds
All dabbling ducks, diving ducks, loons, and grebes in area.
This study collected data to: (1) determine factors that limit the size, composition, and productivity of the breeding populations of aquatic birds on the Yellowknife Study Site; (2) improve and develop new survey designs for censussing duck populations; (3) determine factors affecting the variability of lesser scaup populations with a focus on their breeding ecology; and (4) to determine the productivity of Red-necked and Homed Grebes, especially as it relates to pair-formation behaviour strategies, habitat use, and site fidelity.

090 Wildlife

Hines, James E.
Canadian Wildlife Service, Environ
Suite 301, 5204-50th Ave.
Yellowknife, NT X1A 1E2

Permit No: 2094
Location: Banks Island #1 Bird Sanctuary, Anderson River Bird Sanctuary, Kendall Island Bird Sanctuary

Snow Goose Population and Habitat Studies in the Inuvialuit Settlement Region
Lesser Snow Geese
Researchers evaluated the condition of Lowland Snow Goose habitat on Banks Island, and attempted to determine the impact that an increased harvest is having on Snow Goose numbers both on Banks Island and the mainland.

091 Wildlife

Jalkotzy, Martin
Arc Wildlife Services Ltd.
2201-34 Street SW
Calgary, AB T3E 2W2

Permit No: 2063
Location: Meliadine Lake, NT (63 01' 58" N, 92 35' 06")

Meliadine West Wildlife Baseline Study
All indigenous wildlife will be surveyed.
The study documented the baseline conditions for wildlife populations (relative abundance and seasonal distribution) and their habitat in the area of development potential due to gold prospecting. Baseline information will be used for assessing potential environmental impacts, and for planning monitoring programs in the event that a gold mine is developed.

092 Wildlife

Johnstone, Robin
Golder Associates Ltd.
5007 Bryson Dr., Box 255, Postal Service 9600
Main Level, YK Cente
Yellowknife, NT X1A 2R3

Permit No: 2066
Location: Snap Lake

A Wildlife and habitat Survey for Winspear Resource's Snap Lake Project
All mammal and bird spp.
Researchers did a study to record all wildlife, or signs of wildlife, both within the project area (which is defined as an 11km radius from the centre point of the mine site) and a regional study area (defined as a radius of 31km from the centre of development).

093 Wildlife

Johnstone, Robin
Golder Associates Ltd.
5007Bryson Dr., Box 255, Postal Service 9600
Main Level, YK Centre
Yellowknife, NT X1A 2R3

Permit No: 2088
Location: Focussed around Fort Liard between the Liard and Petitot Rivers and the BC boarder.

A Wildlife and habitat Survey for Paramount Resources' 1999 dev
All mammals and bird species and their signs
This survey recorded wildlife and their signs as part of an environmental assessment for proposed 1999 development activities by Paramount Resources.

094 Wildlife

Johnstone, Robin
Golder Associates Ltd.
5007 Bryson Dr., Box 255, Postal Service 9600
Main Level, YK Centre
Yellowknife, NT X1A 2R3

Permit No: 2099
Location: 32 stream crossing sites between Wrigley and Fort Good Hope

Assessment of Stream Crossings for Planned Improvements to the Mackenzie Valley Winter Road
All mammals and bird species or their signs
This study recorded wildlife or their signs in the project area, as well as identifying existing and potential habitat use by wildlife at stream crossing sites.

095 Wildlife

Johnstone, Robin
Golder Associates Ltd.
5007 Bryson Dr., Box 255, Postal Service 9600
Main Level, YK Centre
Yellowknife, NT X1A 2R3

Permit No: 2101
Location: Suncor Energy Proposed development area near Fort Liard/Nahanni Butte

A Wildlife and Habitat Survey for Suncor's Winter 1999/2000 Development Activities in the Fort Liard/Nahanni Butte Area
All species with emphasis on carnivores, raptors & ungulates
Wildlife and habitat baseline surveys were completed in the project area prior to development using ground level methods.

096 Wildlife

Johnstone, Robin
Golder Associates Ltd.
5007 Bryson Dr., Box 255, Postal Service 9600
Main Level, YK Centre
Yellowknife, NT X1A 2R3

Permit No: 2103
Location: Alberta Energy Company Ltd. project area near Fort Good Hope and Tulita

Wildlife and Habitat Study for Alberta Energy Company's Proposed Sahtu Wellsite
All species with emphasis on carnivores, raptors & ungulates
Helicopters and ground surveys of wildlife and habitat baseline were completed in the project area prior to development.

097 Wildlife

Karlqvist, Anders
Swedish Polar Research Secretariat
P.O. Box 50005, SE-104 05
Stockholm, SE

Permit No: 2086
Location: Research sites within Inuvialuit Settlement Region and Gwich'in Settlement Area (around Inuvik only)

Tundra Northwest 1999
Various Bird, terrestrial mammal, and aquatic species
The Tundra Northwest 1999 expedition studied the geographic variation of terrestrial and freshwater ecosystems of the tundra.

098 Wildlife

Kay, Dave
Ducks Unlimited Canada
5017, 52nd Ave
Yellowknife, NT X1A 1T5

Permit No: 2069
Location: The Ramparts-Hume River Basin (ca. 66 N, 129 W)

Land Cover inventory of Wetland Habitats for the Tulita Lands
All species of waterbirds encountered
Using the Ducks Unlimited (DU) Alaskan method, customized for the Mackenzie Valley, a landover mapping and inventory project was conducted for the "Tulita" TM Satellite scene. This information was provided to local resource managers, to facilitate land-use decisions in the Sahtu.

099 Wildlife

Kay, Dave
Ducks Unlimited Canada
5017, 52nd St.
Yellowknife, NT X1A 1T5

Permit No: 2070
Location: The Ramparts-Hume River Basin (ca. 66° N, 129° W)

Distribution, Abundance and Nesting Success of Waterfowl in the Ramparts - Hume Wetland Area of the Northwest Territories
All species of waterbirds encountered
This study examined: (1) the distribution and abundance of waterfowl species breeding in this area by combining traditional ecological knowledge with systematic aerial and ground-based censussing techniques; and (2) nesting success of breeding waterfowl and the factors limiting it. The goal of the study was to provide the necessary skills and information for local wildlife managers to conserve wetland resources.

100 Wildlife

Kershaw, Peter G.
University of Alberta
Dept. of Earth an Atmospheric
University of Alberta
Edmonton, AB T6G 2E3

Permit No: 2100
Location: SEEDS study site 10km north of Tulita

Studies of the Environmental Effects of Disturbances in the Subarctic (SEEDS)
small mammals... RB vole, meadow vole, shrew
The study examined the distribution, seasonal movement and population densities of small mammals on a burned-over simulated transport corridor and unburned forest. This live trapping program was part of the larger SEEDS project, which has the following objectives: (1) to quantify environmental impacts associated with wildfires and controlled surface disturbances and (2) to evaluate test reclamation/revegetation treatments and develop models to predict results of surface disturbances and reclamation treatments.

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101 Wildlife

Krebs, Charles J.
University of British Columbia
6270 University Blvd.
Vancouver, BC V6T 1Z4

Permit No: 2076
Location: Horton river DEW line (70° 01',126° 56')

Lemming Population Fluctuations in the Eastern and Western Arctic
Brown Lemming, Collared Lemming
The abundance of lemmings in several areas was measured to determine lemming number cycling within the region, and whether lemming numbers in different regions cycle together.

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102 Wildlife

Larter, Nicholas
Resources, Wildlife and Economic Development
Bag Service #1
Inuvik, NT X0E 0T0

Permit No: 2057
Location: Banks Island

Banks Island Caribou Satellite Tracking
Peary Caribou
The study were was carried out to: (1) to determine seasonal range use and migration routes between ranges of caribou; (2) determine movement patterns of caribou; (3) determine if caribou utilize the same traditional ranges now (when populations are more reduced), as they did in the 1970's (when caribou populations were at peak level; and (4) to determine calf survival rates.

103 Wildlife

Larter, Nicholas
Resources, Wildlife and Economic Development
Bag Service #1
Inuvik, NT X0E 0T0

Permit No: 2058
Location: NW Victoria Island

NW Victoria Island Caribou Satellite Tracking
Peary Caribou
Researchers completed this study to: (1) examine seasonal range use and migration routes between ranges of caribou; (2) determine movement patterns of caribou; and (3) to determine calf survival rates.

104 Wildlife

Larter, Nicholas
Resources, Wildlife and Economic Development
Bag Service #1
Inuvik, NT X0E 0T0

Permit No: 2091
Location: Banks and Melville Islands

Peary Caribou and Muskox Classification Durveys, High Arctic Island
Peary Caribou
As part of the ongoing population monitoring program, annual sex and age classification surveys of Peary Caribou on Banks and Melville Island were conducted in order to estimate calf production and overwinter survival. Muskox classification surveys on Banks Island were conducted in areas where muskox have been commercially harvested. Collared caribou were monitored, to determine if they have calves. Antler samples from Melville Island were collected for DNA analyses. Muscle samples from any fresh carcasses encountered were collected for DNA analyses, as well.

105 Wildlife

Latour, Paul
Canadian Wildlife Services
5204-50th Ave, Suite 301
Yellowknife, NT X1A 1E2

Permit No: 2075
Location: Liard Valley, primarily between the BC border and Blackstone River.

Distribution and Abundance of Songbirds in Relation to Forest Cover Type in the Liard Valley
Primarily forest Song Birds of which there are approx. 50 sp.
The species composition, relative abundance and basic habitat relationships of songbirds in a mature forest in the Liard Valley were determined. This information was used to plan experimental studies of the actual and potential impacts of forest harvesting on forest songbird communities.

106 Wildlife

Lennie, John
Norman Wells Renewable Resource Committee
Box 331
Norman Wells, NT X0E 0V0

Permit No: 2083
Location: Palmer Lake (approx. 129° 22' long 64° 28' latitude)

Community-based Population Monitoring of Dall's Sheep in the Mackenzie Mountains, Sahtu Settlement Area
Dall's Sheep
A ground-based Dall's sheep population monitoring was conducted in the Palmer Lake area , in order to examine the number of new born and yearlings that have survived the past winter.

---

107 Wildlife

Lyver, Dr. Philip
Natural Resource Institute
University of Manitoba
Winnipeg, MB R3T 2N2

Permit No: 2106
Location: Lutsel K'e area

The Use and Composition of Traditional Environmental Knowledge and Ecological Science in the Assessment of Barren Ground Caribou Herd Condition.
Barren ground caribou
This study was completed to: (1) use traditional environmental knowledge constructs to assess caribou body fat content and provide and index of herd condition; and (2) use scientific techniques to assess caribou body fat content as an indicator of general herd condition and female reproductive potential. Also, the process of implementing a co-management arrangement between ecological science and TEK, and the cross-cultural exchange between the two knowledge systems was documented.

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108 Wildlife

MacCluskie, Margaret
Ducks Unlimited
2004 Missoula Ave.
Missoula, MT 59802

Permit No: 2082
Location: North Arm of Great Slave Lake (62° N 116° W) and Oscar Lake near Norman Wells (65° 27'N 127° 05'W)

Assessment of Contaminants Loads in Lesser Scaup Breeding Females and Eggs in the Boreal Forest of Canada
Lesser Scaup
Lesser Scaup females breeding in the boreal forest of Canada were examined, to determine if they carry significant amounts of contaminants in their bodies and if these contaminants are passed on to their eggs.

109 Wildlife

MacDonald, Bruce
Sahtu Renewable Resource Board
Box 134
Tulita, NT X0E 0K0

Permit No: 2072
Location: All eight outfitting zones within the Mackenzie Mountains

Ageing of Harvested Moose and Caribou
Woodland caribou
The project involved collecting a minimum of one tooth from every non-resident harvested woodland caribou and moose from each of eight outfitters operating within the Mackenzie Mountains. The teeth collected will be examined, and the age of the animals harvested can be determined.

---

110 Wildlife

MacDonald, Bruce
Sahtu Renewable Resource Board
Box 134
Tulita, NT X0E 0K0

Permit No: 2073
Location: Fort Good Hope (65° 45' N, 128° 45' W), Fort Norman/Tulita (64° N, 127° W)

Community-Based Population Monitoring of Dall's Sheep in the Mackenzie Mountain Sahtu Settlement Area
Dall's Sheep
A 10-14 day ground-based composition survey was carried out at each of two study areas, and fresh faecal samples were collected to determine the presences/abundance of parasites.

---

111 Wildlife

MacDonald, Bruce
Sahtu Renewable Resource Board
Box 134
Tulita, NT X0E 0K0

Permit No: 2074
Location: all eight outfitter zones within the Mackenzie Mountains

Woodland Caribou in the Mackenzie Mountains, Northwest Territories, Territories- Initial Studies
Woodland caribou
Samples of 30 caribou skins (approximately 5-10mm in diameter) were collected from each of the eight outfitters operating within the Mackenzie Mountains. For DNA analysis using this data information about the caribou population was developed.

112 Wildlife

Melton, Derek
Golder Associates Ltd.
5007 Bryson Dr., Box 255, Postal Service 9600
Main Level, YK Centre
Yellowknife, NT X1A 2R3

Permit No: 2078
Location: North of Fort Liard (60 14'N, 123 28'W) between Fisherman Lake and the Liard River

A Wildlife and Habitat Survey for Cheveron's Fort Liard Potential Routing Selection Program
Dall's Sheep, raptor nest site, carnivore dens
The objective of this study was to provide current information on wildlife and habitat use in the immediate project area. This, along with previously documented information will provide baseline wildlife conditions for a routing selection program.

113 Wildlife

Melton, Derek
Golder Associates Ltd.
5007 Bryson Dr., Box 255, Postal Service 9600
Main Level, YK Centre
Yellowknife, NT X1A 2R3

Permit No: 2093
Location: 20Km SW of Tulita, NT. (64°45' N, 125° 45'W.)

Wildlife and Habitat Study for Northrock's Proposed Sahtu Wellsite Project Near Tulita, NT
All Wildlife species observed or their signs
The study was carried out to record all wildlife (or signs that wildlife was present) in the Northrock's Proposed Sahtu Wellsite Project Near Tulita, NT.

114 Wildlife

Mulders, Robert
Resources, Wildlife and Economic Development
600, 5102-50th Ave.
Yellowknife, NT X1A 3S8

Permit No: 2102
Location: Fort Providence area largely within Mackenzie Bison Sanctuary

Lynx Ecology and harvest Monitoring in the vicinity of Fort Providence
Lynx, martin, hare
The objectives in this study were to: (1)determine spatial distribution, home range size, productivity and movements of lynx in an un-harvested area (Mack. Bison Sanctuary); (2) monitor hare densities in order to better predict and interpret fluctuations in numbers of lynx and other furbearers; (3) document lynx harvest intensity, composition, and location from Ft. Providence trappers; and (4) to monitor marten harvest intensity and composition from a single trapper.

115 Wildlife

Nagy, John
Resources, Wildlife and Economic Development
Bag Service #1
Inuvik, NT X0E 0T0

Permit No: 2098
Location: Rendevous Lake, Natluk

Cape Bathurst and Bluenose-West Caribou Herd Photocensus
Bluenose-West Caribou
During the study, researchers deployed 60 conventional radio collars on Cape Bathurst and Bluenose-West caribou in preparation for a photocensus in July 2000.

116 Wildlife

Nishi, John
Resources, Wildlife and Economic Development
P.O. Box 390
Fort Smith, NT X0E 0P0

Permit No: 2059
Location: Fort Resolution, NT

Hook Lake Wood Bison Recovery Project 1999
Bison
The project was carried out to provide veterinary care and treatment (to eliminate tuberculosis and brucellosis) to 59 salvaged calves and their offspring. This was done in order to help develop a disease free herd of bison that originated from the Hook Lake area in captivity, and to maintain the genetic integrity of the salvaged herd.

117 Wildlife

Nishi, John
Resources, Wildlife and Economic Development
P.O. Box 390
Fort Smith, NT X0E 0T0

Permit No: 2060
Location: Slave River Lowlands, Hook Lake Area, NWT

Hook Lake Bison Necropsy Course/ Disease Monitoring Program
Bison
The goal of the project was to collect 15 bison (of either sex) for the purposes of post mortem instruction and bison disease awareness training.

118 Wildlife

Nishi, John
Resources, Wildlife and Economic Development
P.O. Box 390
Fort Smith, NT X0E 0P0

Permit No: 2081
Location: Fort Providence Area, NT

Population and Disease Studies
Bison
The objectives of this study were to: (1) test biochemical assays for detecting anthrax spores in the environment and to determine their distribution; (2) measure calf, yearling and bull/cow ratios during the post-calving period; and (3) to collect tissue samples from bison to be used for genetic documentation and monitoring of the Mackenzie herd for the presence of brucellosis and tuberculosis.

119 Wildlife

Nishi, John
Resources, Wildlife and Economic Development
P.O. Box 390
Fort Smith, NT X0E 0P0

Permit No: 2105
Location: Bison range in South Slave Region

Use of Traditional and Local Ecological Knowledge in Defining an Approach to Disease Risk and Management for the Wood Bison in the NWT
Bison
The project completed used Participatory Rural Appraisal and scientific wildlife research techniques to study bison distribution and movements in the NWT for disease risk assessment purposes in support of bison management.

120 Wildlife

Pfister, Shirley Standafer
Monopros Limited
P.O.Box 2520
Yellowknife, NT X1A 2P8

Permit No: 2071
Location: Kennady Lake, NTS 75n/6, Co-ordinates 7 035 100mN, 589 800mE

Kennady Lake Wildlife and habitat Inventory
Barren-grounds caribou, waterfowl, raptors, breeding bird
The project was completed to collect baseline information on wildlife and habitat within the Kennady Lake (mining exploration lease) area.

121 Wildlife

Solberg, John W.
US Fish and Wildlife Service
1500 Capital Ave.
Bismarck, ND 58501

Permit No: 2087
Location: Mills Lake Marsh, Mackenzie River, approx. 18 miles west of Fort Providence, NT.

Western Canada Cooperative Waterfowl Banding Program - Mills Lake Station
mallard, northern pintail, green and blue winged teal
In th study, a preseason banding of mallards, northern pintail and other waterfowl species was conducted using barley bait traps. As well, the collection of two whole secondary feathers from each of the ten pintails and ten mallards at each banding site was carried out.

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122 Wildlife

Veitch, Alasdair
Resources, Wildlife and Economic Development
Box 130
Norman Wells, NT X0E 0V0

Permit No: 2065
Location: Loretta Canyon in Front Range of the Mackenzie Mountains, NT

Investigation of the parasite Fauna of Dall's Sheep in the Mackenzie Mountains, NT
Dall's sheep
The research team studied parasites, body condition and health status of Dall's sheep in the Mackenzie Mountains, with particular emphasis on an unidentified muscle nematode.

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123 Wildlife

Veitch, Alasdair
Resources, Wildlife and Economic Development
GNWT, Box 130
Norman Wells, NT X0E 0v0

Permit No: 2079
Location: Willow Lake, Loche River watershed (65°14'N, 125°25'W)

Western Canada Cooperative Duck banding Program at Willow Lake Sahtu Settlement Area, NWT 1999
Mallards, Northern Pintail, Green-winged Teal
The Pacific Flyway Council sets annual banding objectives. The objective of the study completed was to band 800 to 2,000 Mallards and 400 to 1,500 Northern Pintails, and all incidentally captured waterfowl (preferably 1,000 per species), prior to the opening day of hunting season (01 September)

124 Wildlife

Voelzer, James F.
US Fish and Wildlife Service
911 NE 11th Ave.
Portland, OR 97232-4181

Permit No: 2067
Location: Fort Smith, NWT to Tuktoyaktuk, NWT-Mackenzie River Drainage

Cooperative US/Canada Waterfowl Population Surveys
All Waterfowl
An aerial survey was completed to determine the size and composition of the breeding population of ducks and other waterfowl in the Mackenzie River drainage.

125 Wildlife

Willams, Scott
BHP Diamonds Inc.
#1102, 4920-52nd St.
Yellowknife, NT X1A 3T1

Permit No: 2055
Location: BHP claim Block (64°40' N, 110°43' W)

Wildlife Monitoring-Ekati Diamond Mine
Caribou, grizzly bears, wolves, wolverines
The purpose of this study was to monitor the effects of mining activities such as disturbance, loss of habitat, and roads as potential barriers on following species: caribou; grizzly bears; wolves; wolverines; upland breeding birds; loons and raptors.

Department of Fisheries and Oceans
Fisheries Scientific Licences

126 Fisheries

Chiperzak, Doug
Department of Fisheries and Oceans
Box 1871
Inuvik, NT X0E 0T0

Reference No: SLI-99/00-225 (DFO)
Location: Waters the Beaufort Sea and Amundsen Gulf

Baseline Study to Determine Future Plans in the Beaufort and Amundsen Gulf
A study to collect baseline data for fish, plankton and benthos, in order to determine future long-term research plans for these waters, was completed.

---

127 Fisheries

Cote, Peter
Department of Fisheries and Oceans
Suite 101 Diamond Plaza
Yellowknife, NT X1A 1E2

Reference No: SLI-99/00-215 (DFO)
Location: Tibbit Lake and a second control lake within the following co-ordinates;
62-35 N x113-23 W, 62-32N x 113-23 W, 62-35 N x 113-20 W, 62-32N x 113-20W.

Lake Survey - Multi Disciplinary Study of Effects of Forest Fires on Northern Canada
A comprehensive lake survey to collect background information in relation to fish, fish habitat and limnology was conducted as part of a multi disciplinary study of the effects of forest fire on northern ecosystems.

---

128 Fisheries

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Department of Fisheries and Oceans
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harwoodl@dfo-mpo.gc.ca

Reference No:
SLI-99/00-216 (DFO)
Location: The Hornaday River (69-18 N x 123-40 W)

Study of Spawning Locations for Charr in the Hornaday River
The presence of spawning habitat in the Hornaday River was confirmed by radio tagging current year charr; and by documenting characteristics of at least four charr spawning and overwintering areas.

129 Fisheries

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Reference No: SLI-99/00-217 (DFO)
Location: Tuktoyaktuk Harbour (69-27 N x 133-00 W)

Population Dynamics study of Fish in the Tuktoyaktuk Harbour
The population dynamics and Catch *per* Unit Effort (C.P.U.E.) of cisco and other species in Tuktoyaktuk Harbour in July and September were confirmed, and the exploitation rate of cisco assessed, through a tag and recapture program.

130 Fisheries

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Reference No: SLI-99/00-218 (DFO)
Location: Fish Lake on the Kuujjua River system (71-10 N x 116-35 W)

Observation of Charr in the Kuujjua River
This study examined and sampled current year spawners to determine the usage of deep holes by charr in the fall and winter; and to locate and document rearing and spawning sites used by Kuujjua River charr.

131 Fisheries

Harwood, Lois
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Reference No: SLI-99/00-219 (DFO)
Location: Safety Channel near the community of Holman. (70-30 N x 117-15 W)

A Study on Ring Seals in Safety Channel near Holman
The study : (1) documented the range and movement of ring seals in the Safety Channel Area; (2) examined the depth and duration of ringed seal dives, haul out cycles, and time spent at the surface; and (3) examined their distribution and movements in relation to ice conditions and oceanographic features

132 Fisheries

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42043 Mackenzie Highway
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lowg@dfo-mpo.gc.ca

Reference No: SLI-99/00-208 (DFO)
Location:

Fish Survey on McGill Lake and Deep Lake
The study surveyed fish stocks on McGill Lake and Deep Lake. Data was collected on species composition, CPUE, size and age. As well, flesh samples were analysed for mercury and selenium levels.

133 Fisheries

Low, George
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lowg@dfo-mpo.gc.ca

Reference No: SLI-99/00-200 (DFO)
Location: Administrative areas 1W and Area 2 of Great Slave Lake. (61°23'N , 115° 38'W)

Comparison of Gill Nets in Great Slave Lake
The catches of 127 mm and 133 mm 30 mesh depth gillnets (DFO experimental gear) with the catch of 127 mm and 133 mm 60 mesh depth gillnets (typical Commercial Fishery gear) were compared in Area 1 and Area 2 of Great Slave Lake.

134 Fisheries

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Reference No: SLI-99/00-224 (DFO)
Location: The Slave River within the Northwest Territories (61-18 Nx 113-39 W)

Assessment of Inconnu on Slave River
The Inconnu spawning run on the Slave River was assessed by: (1) collecting information on C.P.U.E.; (2) measuring size and age of 200 inconnu; and (3) fly tagging up to 400 inconnu to track post spawning distribution and vulnerability to the Great Slave Lake fisheries.

135 Fisheries

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lowg@dfo-mpo.gc.ca

Reference No: SLI-99/00-226 (DFO)
Location: Colville Lake (67 10 N x 126 00 W), Aubry Lake (162 23 N x 126 30 W) and Lac Belot (66 53 N x 126 16 W)

Survey of Fish Stocks on Colville, Belot and Aubry Lakes
Fish stocks on Colville, Belot and Aubry Lakes were surveyed by collecting data on species composition, C.P.U.E., size and age. As well, flesh samples will be analysed for mercury and selenium levels.

136 Fisheries

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lowg@dfo-mpo.gc.ca

Reference No: SLI-99/00-228 (DFO)
Location: McEwan Lake (60-49N x 119- 57W) and Reade Lake (60-54N x 119-55W).

Survey of Fish Stocks on McEwan and Reade Lake
Fish stocks on McEwan Lake and Reade Lake were surveyed by collecting data on species composition, C.P.U.E., size and age. As well, flesh samples will be analyzed for mercury and selenium levels.

137 Fisheries

Siferd, Tim
Freshwater Institute
501 University Crescent
Winnipeg, MB R3T 2N6

Reference No: SLI-99/00-222 (DFO)
Location: Waters of Sachs Harbour (71-58.5 N x 125-17 W), Blue Fox Harbour (72-05 N x 125-45 W), Sea Otter Harbour (72-35 N x 125-05 W) and environs.

Investigation of Marine Ecosystem Near Sachs Harbour
The marine ecosystem near the community of Sachs Harbour was investigated, to examine shellfish and fish populations as well as other components of the ecosystem.

138 Fisheries

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Stephenson@dfo-mpo.gc.ca

Reference No: SLI-99/00-223 (DFO)
Location: The Vittrekwa River (67-10 N x 135-01 W)

Survey of Dolly Varden on Vittrekwa River
The distribution and abundance of Dolly Varden (*Salvelinus malma*) within the headwater area of the Vittrekwa River system was determined. As well, data to confirm species was collected, and genetic material sampled for later analysis by DFO Scientist Dr. Jim Reist.

139 Fisheries

Tallman, Ross
Freshwater Institute
501 University Crescent
Winnipeg, MB R3T 2N6

Reference No: SLI-99/00-221 (DFO)
Location: The Peel River (67-42 N x 134-32 W) and tributaries (Snake, Hart, Oglivie, Wind Bonnet Plume and Blackstone Rivers).

Fish Survey on Peel River
The fish resources of the Peel River were assessed.

140 Fisheries

Tallman, Ross
Freshwater Institute
501 University Cresent
Winnipeg, MB R3T 2N6

Reference No: SLI-99/00-220 (DFO)
Location: Campbell Lake and Campbell Creek (68=12 N x 133-28).

Fish Resource Assessment at Campbell Lake and Campbell Creek
The fish resources of Campbell Lake and Campbell Creek were assessed.

Researchers and Agencies Index 1999

Aurora Research Institute
Science Licences

001 Aiken, Susan
002 Alexander, Martin
003 Anderson, David
053 Beddos, Colin
022 Bleeker, Wouter
054 Branch, Jennifer
032 Burn, Chris
056 Castleden, Heather
055 Chappell, Hayley
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034 Dyke, Larry
023 Eaton, David
035 English, Michael
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070 Fedirchuk, Gloria
071 Friesen, Max
072 Ronaghan, Brain
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075 Thomson, Callum
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Glossary of Scientific Terms

accreditation: to gain credit

accretion: the process by which stones and other inorganic material add to their mass by adding particles to their surfaces

actinomycete: member of an order of bacteria which form filaments, but not mycelium

active layer: area where soil freezes and thaws above the permafrost

aggradation: the spread or growth of permafrost under the present climatic conditions due to natural or artificial conditions

albedo: refection fraction of a surface

algae: a phylum of photosynthetic organisms that are almost exclusively aquatic

anisotropy: a condition where a physical properties vary with direction

anthropology: the study of human beings and their beliefs and ways of life. It deals with the development of these features of culture from prehistoric times to the present

archaeology: the study of the way humans lived a long time ago. Archaeologists dig up the remains of ancient cities and towns and then study the tools, weapons, pottery and other things they find

archipelago: a cluster of islands

artifacts: a product or human art and workmanship

atmosphere: the layer of gases that surrounds the Earth. The atmosphere is made up of oxygen, nitrogen, carbon dioxide and other gases

bacteria: single celled organism that contains a nucleus

basalt: a kind of volcanic rock that is hard, heavy, dark and glassy in appearance

bedrock: the solid rock that is below loose material, such as soil, sand, clay, or gravel

benthic: bottom dwelling marine life

Beringian: a place located in Alaska and central Yukon where it was not covered by glaciers during the Wisconsin period

bio-geochemistry: science that deals with the relation of the earths chemicals to plant and animal life in an area

biomass:	the total amount of all living things within a specific volume/area of the environment
borrow:	an excavation dug to provide material for fill elsewhere
calcretes:	a mix of gravel and sand cemented by calcium carbonate
Canadian Shield:	a Pre-Cambrian plateau covering half of Canada
catchment:	a catching or collecting of water, especially rainwater
collated:	two or more similarly ordered sets of values combined into one
coniferous trees:	an order of woody trees that produce cones - pine, spruce
craton:	central basin of a body of water
cumulative:	increased or increasing amount of force
diamicton:	glacial soils with clay, sand, gravel and boulders mixed together
diatom:	microscopic one-celled marine or freshwater alga having cell walls that contain silica (a white or colorless glass-like solid that doesn't dissolve)
diurnal:	changes that occur during the day
energy budget:	balance between the energy going into a body of water (sunlight) and not used but radiated out
epipelic	an organism growing on sediment
erosion:	group of natural processes (weathering, disintegration, abrasion, corrosion, transportation) where the Earth's surface is worn away and removed
esker:	a long, narrow ridge of coarse gravel deposited by a stream flowing in or under a decaying glacial ice sheet
fissure:	an extensive crack in a rock
fracture:	breaking of rock other than it's lines of clevage
freshet period:	the time where the ice has just melted on a stream or river

fossil:	trace of an organism of a past age, embedded and preserved in the Earth's crust
geochemical:	a science that deals with the chemical composition of and chemical changes in the solid matter of the earth
geological:	the science that deals with the structure of the earth
geologists:	scientists who study rocks, mountains and cliffs to find out what the earth is made of and what changes have taken place over the years.
geochemical:	pertaining to the chemical elements and compositions of minerals and rocks
geochronological	timeline of the past seen from geological data instead of human records
geomorphological:	the study of the physical features of the Earth's surface
glacial:	of relating to or derived from a glacier
glaciofluvial:	pertaining to meltwater streams coming from wasting glacier ice and to deposits and landforms produced by the streams
glaciolacustrine:	pertaining to deposits around glaciers that have formed from the sediment suspended in stream water coming from glaciers
glaciolacustrine:	lakes fed by melting glaciers
global radiation:	energy given off by the Earth
humus:	the dark and less stable part of the organic matter of the soil
hydrology:	science dealing with the properties, distribution and circulation of water
hypsithermal:	having a high temperature
ice wedges:	wedge shaped ice produced in permafrost, occurring as a vertical or inclining sheet
invertebrates:	an animal that has no backbone or skeleton (e.g. worms, insects)
isotope:	one of two or more atoms with the same atomic number but with different numbers of neutrons (weight will differ) (e.g. carbon^{13} which is stable versus carbon ^{14} which is radioactive)

kimberlite:	a rare blue tinged rock that sometimes contains diamonds
knoll:	a small low and round hill
landforms:	a natural feature of land surface (e.g. plains, mountains, valleys)
larvae:	A premature stage for an insect where it feeds a lot before it becomes a pupa
magnetotelluric:	study of the underground magnetic fields of the earth
microclimate:	the climate close to the Earth's surface or the climate of a small area
micro-topography:	the shapes and forms of the land on a small scale
mitigation:	making something less severe
morphometrics:	measurements taken at designated places to compare individuals of a species
paleo-hydrological	having to do with ancient hydrological features preserved in rock
permafrost:	permanently frozen layer of soil, subsoil and other deposits occurring at variable depths below the Earth's surface in the Arctic and subarctic
phytoplankton:	passively floating tiny plant life in a body of water
pingo:	Large conical mound of soil-covered ice elevated by hydrostatic pressure of water within or below the permafrost
plankton:	very small plants and animals that float in seas and lakes
porous:	able to let through air or water through tiny openings in the material
precipitation:	falling water in the form of rain, sleet, hail or snow
proglacial lakes:	lakes in front of a glacier
proterozoic:	geological period containing the oldest forms of life
radiation:	energy given off in the form of waves or very tiny particles
radiometric:	having to do with the dating of geological specimens through determining the ratios of isotopes
reefs:	strip or ridge of rocks, sand or coral that rises to or near the surface of a body of water
sediment:	solid fragmented material that occurs from the weathering or rocks. In water it is material that has settled from a state of suspension.
sepals:	a specialized leaf on a flower that makes up part of the calyx
seismograph:	instrument used to detect and magnify the Earth's motions such as with earthquakes
shale:	a rock formed from mud that is hardened

shear zone: area of rock that has been crushed by strain, often bearing channels for underground solutions

silt: fine particles of sand, clay, dirt and other materials

socioeconomic: of or involving both social and economic factors

spawning: time when fish produce eggs or young

stratigraphy: the science of rock strata, or the different layers of rocks

sublimation: going from a solid to a vapour without melting to moisture (e.g. changing from ice to steam without melting into water first)

surficial: on the surface

sympatric: taking/occupying the same space

tabular: having a flat surface, resembling a slab

tectonic: relating to, causing, or resulting from structural deformation of the earth's crust

teleseismatic: Earth's movements far from the recording site

terraces: a gently sloping part of lake that is relatively flat

terrestrial: having to do with the Earth's dry land

thermatic: ability to cause or retain heat

topography: the shapes and forms of the land in a particular region. Topography of an area will include mountains, valleys, plains and lakes etc.

transects: a sample area of vegetation (usually a narrow continuous strip) used for the recording of data

transparency: the ability on water to transmit light

tributary: where a stream feeds into a larger stream or a lake

truncation: cutting something off

ungulates: animals with hooves